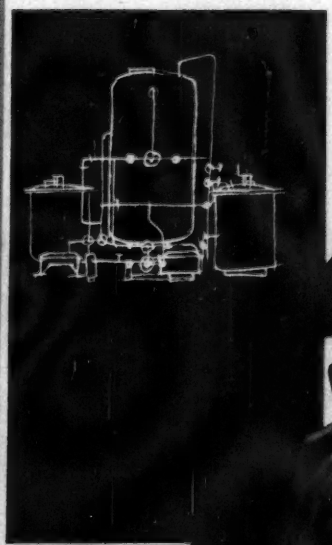
# Chemical Age


Sir, why
not ask NECKAR
about de-ionisation?

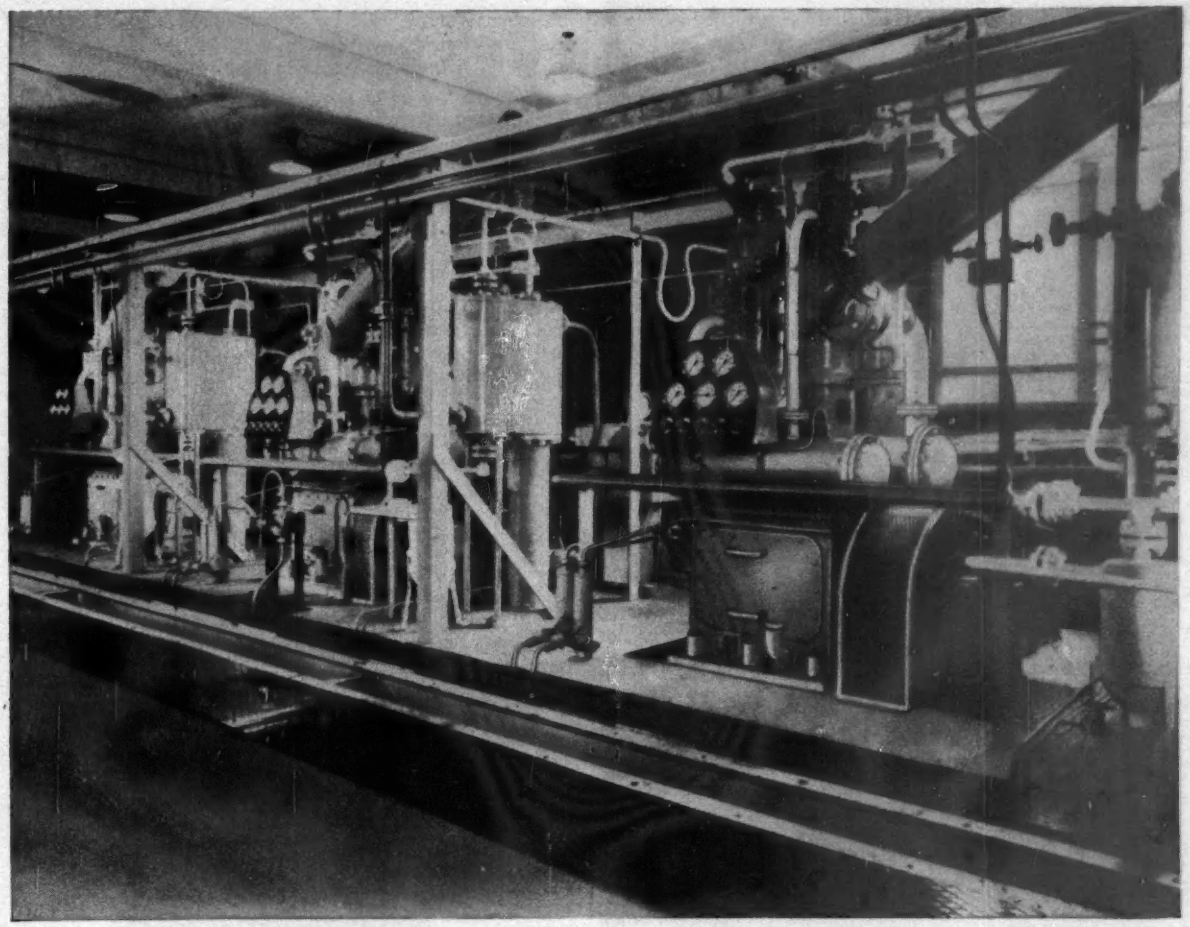
# De-ionisation!

## I Did ask NECKAR



. . . and, briefly, it is a process of Ion Exchange that offers great advantages to many industries, e.g., it produces pure water for purposes where distilled water is normally used, such as;

• Silvering of glass • Fixing of fluorescent screens on television tubes • The preparation of photographic and other emulsions • The dilution of high-proof potable spirits • The production of pharmaceutical and fine chemicals



# COMPRESSORS FOR SCIENTIFIC RESEARCH

**Three Brotherhood two-crank four-stage compressors supplied to the University of Cambridge for a high speed wind tunnel installation.**

Brotherhood compressors are designed to customers' exact requirements.

## PETER BROTHERHOOD LTD

PETERBOROUGH ENGLAND

**Compressor and power plant specialists for nearly a century**

P5146

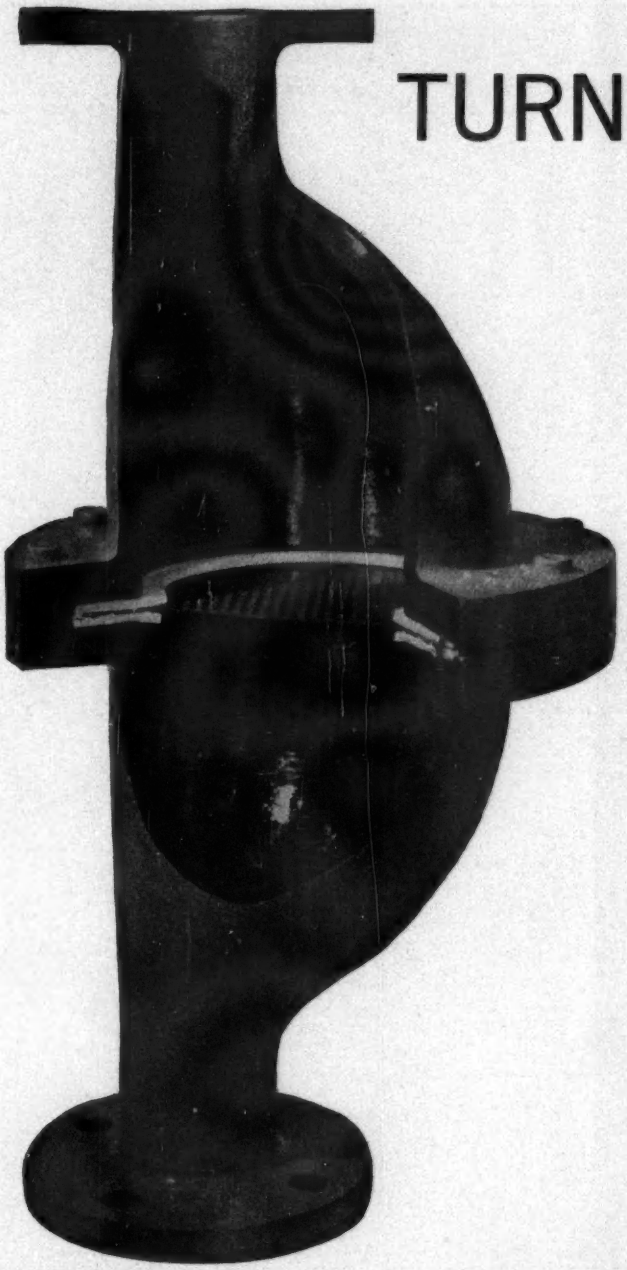
A

# INDEX TO ADVERTISERS

*The first figures refer to advertisements in* **Chemical Age Directory & Who's Who,** *the second to the current issue*

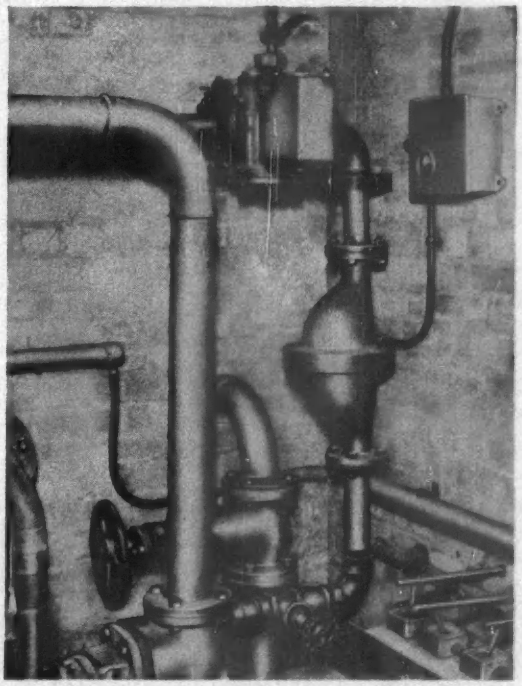


*(Continued on page 714)*



# TURNING THE SCALE

The electrical water treatment pipe units, made by Aquastat Ltd and used to prevent scale, have their interior surfaces coated with Araldite. This epoxy coating resin is an excellent electrical insulator; it adheres strongly to the metal, is entirely impervious to water over very long periods, and is unaffected by chemicals found in all waters normally in use; it is also highly resistant to abrasion and scouring action. Aquastat Ltd have tested many forms of coating for their pipe units. Araldite, which has been used for the last five years, has proved the most effective and the most economical.



Araldite epoxy resins are used—

- for casting high grade solid electrical insulation
- for impregnating, potting or sealing electrical windings and components
- for producing glass fibre laminates
- for producing patterns, models, jigs and tools
- as fillers for sheet metal work
- as protective coatings for metal, wood and ceramic surfaces

Araldite epoxy resins

*Araldite is a registered trade name*

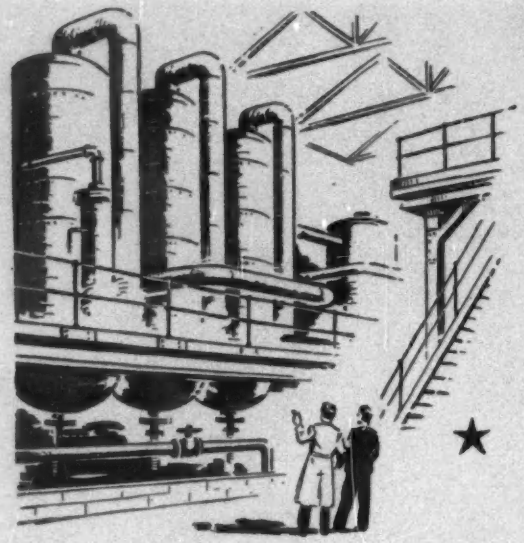
CIBA (A.R.L.) LIMITED

*Duxford, Cambridge. Telephone: Sawston 2121*

AP 509

# INDEX TO ADVERTISERS

*The first figures refer to advertisements in* **Chemical Age Directory & Who's Who,** *the second to the current issue*



*for*

**SULPHURIC ACID**
**OLEUM**
**BATTERY ACID**
**NITRIC ACID**
**HYDROCHLORIC ACID**
**DIPPING ACID**
**DISTILLED WATER (PURE)**

*ALL ACIDS ARE AVAILABLE IN PURE OR COMMERCIAL QUALITIES*

*consult*

**SPENCER CHAPMAN & MESSEL LTD.**

**BORAX HOUSE · CARLISLE PLACE · LONDON · S·W·1**

**TELEPHONE · TATE GALLERY 8215**
**TELEGRAMS · HYDROCHLORIC TELEX. LONDON**
**WORKS · SILVERTOWN · E·16**

---

# ALDRED

*for*

# CHARCOAL

**BARBECUE**
**COOKER**
**HORTICULTURAL**
**INDUSTRIAL**
**MEDICINAL**
**AND**
**SPECIAL PURPOSE CHARCOALS**

**CASE HARDENING COMPOUNDS**

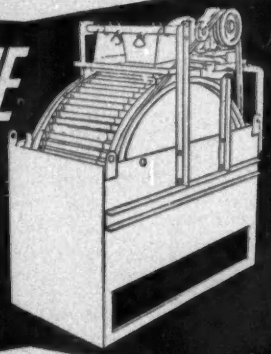
*Enquiries to*

**SHIRLEY ALDRED & CO. LTD.**
**WORKSOP, NOTTS.**
**PHONE : WORKSOP 2192**

---

*now available —*

# *FOR THE FIRST TIME*



**A PACKAGED INDUSTRIAL SCREEN NG UNIT**
*for continuously removing solids from water. No civil works necessary*

*✲ FULLY AUTOMATIC ✲ SELF CONTAINED ✲ TRANSPORTABLE ✲ SEVERAL SIZES ✲ SUITABLE FOR MOST INDUSTRIAL AND PUBLIC SERVICE APPLICATIONS*

**TECHNICAL ADVISORY SERVICE AVAILABLE**

*Write for details—now: Patent applied for*

**F. W. BRACKETT & CO LTD**
COLCHESTER ENGLAND
Telephone: COLCHESTER 73958 Telegrams: BRACKETT COLCHESTER
P 5865

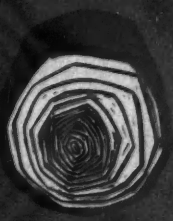
# VERSATILE FUNGICIDE AND BACTERICIDE FOR INDUSTRY—

Whatever your business, you'll find 'TOPANE' the best germicide you can buy. Outstanding in safety and non-toxicity, 'TOPANE' also fills the bill in efficiency and economy. Consider the low concentrations of 'TOPANE' needed to control the growth of these prevalent fungi and bacteria:

| Industry | Species of fungi or bacteria prevalent | % for inhibition of growth |
|---|---|---|
| **Disinfectants** | *Aerobacter aerogenes* | 0·032 |
| | *Bacillus rubricus* | 0·004 |
| | *Escherichia coli* | 0·032 |
| | *Pseudomonas caudata* | 0·032 |
| | *Staphylococcus aureus* | 0·032 |
| | *Trichophyton interdigitale* | 0·008 |
| **Textiles and Ropes** | *Aspergillus niger* | 0·004 |
| | *Chaetomium globosum* | 0·008 |
| | *Cladosporium herbarum* | 0·008 |
| | *Memnoniella echinata* | 0·004 |
| | *Myrothecium verrucaria* | 0·002 |
| | *Penicillium notatum* | 0·008 |
| **Adhesives** | *Bacillus subtilis* | 0·016 |
| | *Aspergillus flavus* | 0·008 |
| | *Paecilomyces varioti* | 0·008 |
| | *Penicillium variabile* | 0·004 |
| **Timber** | *Ceratocystis pilifera* | 0·008 |
| | *Coniophora cerebella* | 0·008 |
| | *Merulius lacrymans* | 0·001 |
| | *Polystictus versicolor* | 0·008 |
| **Foods** | *Alternaria citri* | 0·008 |
| | *Diplodia natalensis* | 0·010 |
| | *Penicillium italicum* | 0·016 |
| | *Rhizopus nigricans* | 0·016 |

'TOPANE' (I.C.I.'s brand of ortho phenylphenol) is soluble in organic solvents, and 'TOPANE' WS (I.C.I.'s brand of sodium ortho phenylphenate) is its water-soluble grade. Both products are lethal to many bacteria, fungal spores, surface mildews, algae and rots, and can be employed to protect organic matter against most forms of microbiological degradation.

# 'TOPANE' COMBINES EFFICIENCY WITH OUTSTANDING SAFETY



?

**NAME** ..... **COMPANY** .....

**ADDRESS** ..... **TEL. No.** .....

**Please send further information on 'TOPANE' for Application No.** .....

**Please arrange for representative to call to discuss 'TOPANE' for Application No.** .....

***(If your interest is aroused by Application No. 6, please enclose with this coupon a brief statement of the problem.)***

**IMPERIAL CHEMICAL INDUSTRIES LIMITED, MILLBANK, LONDON, S.W.1**

MT. 1

# Cellosize*hydroxyethyl cellulose

Cellosize hydroxyethyl cellulose grades WP-09, WP-3 and WP-300 provide the manufacturer of emulsion polymers or finished coatings with low cost protective colloids over a useful viscosity range.

MAJOR ADVANTAGES INCLUDE:

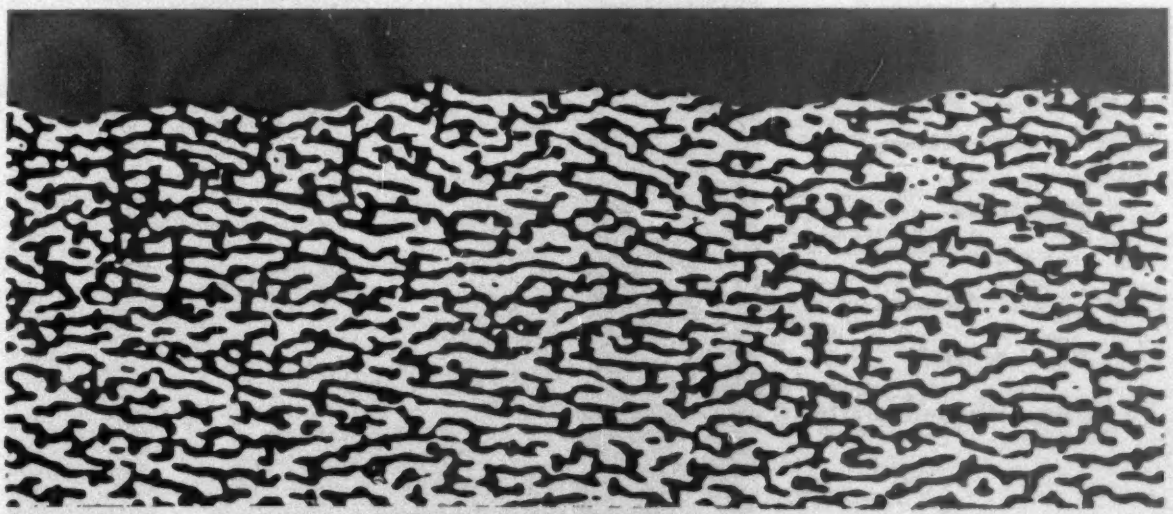
- Low concentration requirement
- Ready solubility—HOT or COLD
- Compatibility with dissolved salts
- Compatibility with gums and resins

TO GIVE A FINISHED PAINT WITH:

- Freeze-thaw stability
- Good shelf life
- Excellent flow and brushability characteristics
- Improved water resistance

This unique combination of properties plus continuity of supply make Cellosize hydroxyethyl cellulose especially attractive. Higher viscosity grades are available if required. You will want more information, and this together with samples, will be forwarded on request.

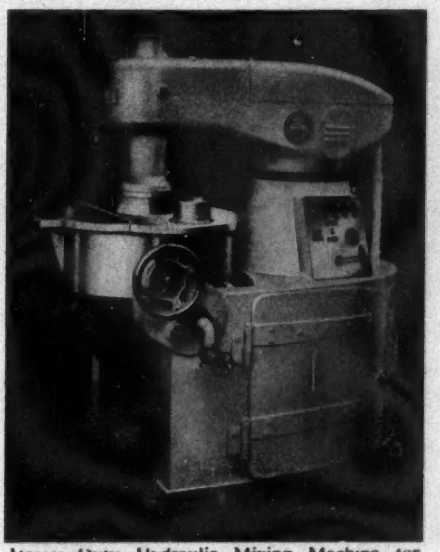
UNION CARBIDE



* The terms CELLOSIZE and UNION CARBIDE are trade marks of UNION CARBIDE CORPORATION

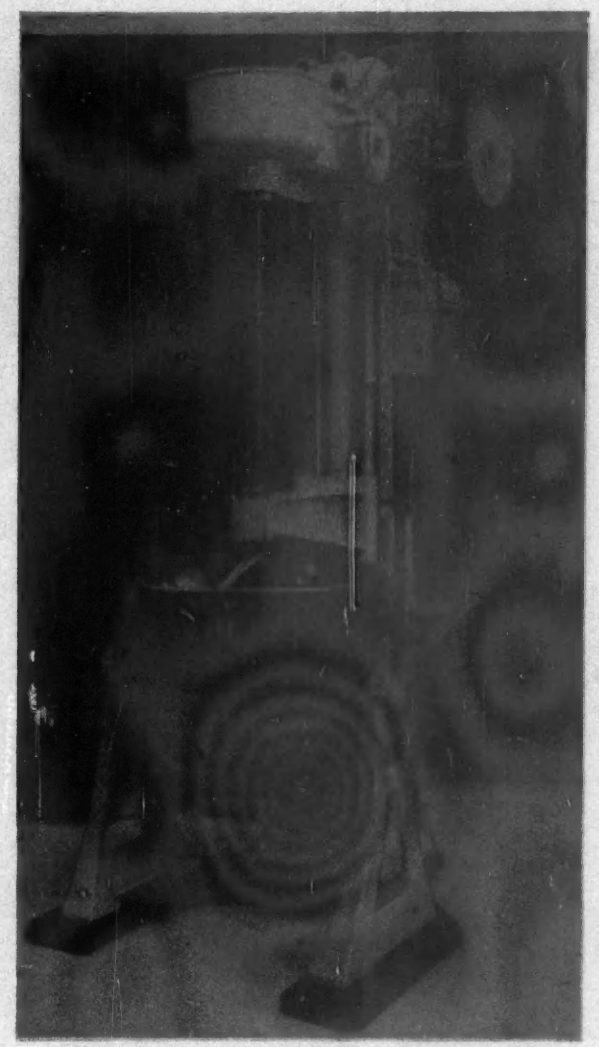
UNION CARBIDE LIMITED · CHEMICALS DIVISION · 8 GRAFTON STREET · LONDON W1 · MAYFAIR 8100

CRC 75



Heavy Duty Hydraulic Mixing Machine for caramel, nougat, etc., 1½ to 3 cwts. capacity, Type 16 PD.

This Mixing Machine has Pan lined with Pure Silver. Type 23 PJ.



Mixing Machine for caramel, etc., 1½ cwts. Type 7½PD.

Illustrated here are only a few of the many types of Mixing Machines that are being produced by Kellie of Dundee.

For almost fifty years, Robert Kellie & Son, Limited, have been supplying the Food, Baking & Confectionery Trades with Mixing Machines, of all types, fabricated in Stainless Steel, Copper Alloys, Aluminium and other metals. Designed to meet individual requirements, these mixing machines are in service in many of the leading factories in Britain and abroad.

If your manufacturing process involves mixing of any kind . . . viscous or non-viscous, food, chemicals, liquids, cereals, light or heavy duty . . . Call in Kellie of Dundee . . . they are the specialists . They have been producing high quality mixing machines at economical prices for almost half a century.

Write or telephone now for details of the Kellie Technical Consulting Service. It is free and without obligation.

KELLIE

FOR MODERN FOOD PLANT

# ROBERT KELLIE & SON LTD.

THE DUNDEE FOUNDRY · DUNDEE · SCOTLAND

*Telephone: Dundee 25687/8* *Telegrams & Cables: KELLIE, DUNDEE*

C

VOL. 85 No. 2182
MAY 6 1961

Telephone: FLEet Street 3212 (26 lines)
Telegrams: Benformula - Cent - London

Editor M. C. HYDE
Manager R. C. BENNETT
Director N. B. LIVINGSTONE WALLACE

Midland Office
Daimler House, Paradise Street, Birmingham. [Midland 0784-5]

Leeds Office
Permanent House, The Headrow, Leeds 1. [Leeds 22601]

Scottish Office
116 Hope Street, Glasgow C2. [Central 3954-5]

## IN THIS ISSUE



**Annual subscription is: home, 57s 6d, overseas, 65s, single copies 1s 9d (by post 2s)**

Chemical Age
incorporating
PETROCHEMICALS and POLYMERS

BOUVERIE HOUSE · 154 FLEET STREET · LONDON · EC4

# PLASTICS IN FRANCE

THE plastics industry in France has come a long way since just before the second world war when the annual production amounted to some 12,000 tonnes to the present situation of about 330,000 tonnes produced in 1960, and an expected production of 400,000 tonnes in 1961.

As in all industrial countries of the world, the chemical industry in France has shown an exceptionally rapid growth, and, within the industry, the growth of synthetic organic chemicals is noticeably ahead. This is largely due to the rise in plastics, fibres and more recently synthetic rubber production.

The factors which have influenced the growth of the French plastics industry have naturally been more or less similar to those encountered elsewhere, but the ease of obtaining practically unlimited quantities of raw materials in France has undoubtedly been one of the most important factors. Prices are often relatively low and will continue to diminish.

Steel production, which reached 17 million tonnes in 1960, has meant more coke-oven gas. A peculiarity of the coke-oven plants in France is that they are very often associated with synthetic ammonia plants. The removal of hydrogen for ammonia production leaves methane and ethylene fractions for further use. The percentage of ethylene from certain available coals may be as high as 3% of the gas.

Large industrial organisations are still developing around the coal fields in Northern and Eastern France—in the Lorraine coalfields for example. The French collieries are directed towards an efficient use of the coal chemicals in order to take up the excess production of coal efficiently. The disadvantage of coal as a source of raw materials for plastics is that the coal products are limited by steel production, and it is on petroleum derivatives that France, together with other industrial countries, will rely increasingly for raw materials. Chemical industries are growing up around refineries, and those of the Berre area and the lower Seine and lower Loire districts are particularly important. These produce olefins, diolefins, benzene, xylenes and cumene.

The opportunities of setting up a large scale petrochemical industry are also greatly enhanced by the natural gas deposits at Lacq and the planned Saharan-France pipeline. In 1960 the Lacq field produced 60,000 million cu. ft. of refined gas after extraction of 800,000 tonnes of sulphur. In 1961 the production will be almost doubled. This provides a source of ethylene, acetylene, methanol, formaldehyde and urea. Up to now p.v.c. has been produced from acetylene obtained entirely from calcium carbide but in the Lacq plant 30,000 tonnes of acetylene will be produced by methane cracking.

Plastics production in France has a present turnover of £70 million and is divided between about 30 firms. Heading the list is p.v.c., of which 110,000 tonnes were produced in 1960. About 25% of p.v.c. produced is exported. The polystyrene figure for 1960 is expected to be 40,000 tonnes and that for polythene 35,000 tonnes.

Among the new plants for plastics production is the high pressure polythene plant of Compaigne Française de Raffinage and El Paso Natural

(*Continued on page 730*)

VOL. 85 No. 2182
MAY 6 1961

Telephone: FLEet Street 3212 (26 lines)
Telegrams: Benformula - Cent - London

Editor M. C. HYDE
Manager R. C. BENNETT
Director N. B. LIVINGSTONE WALLACE

Midland Office
Daimler House, Paradise Street, Birmingham. [*Midland* 0784-5]

Leeds Office
Permanent House, The Headrow, Leeds 1. [*Leeds* 22601]

Scottish Office
116 Hope Street, Glasgow C2. [*Central* 3954-5]

## IN THIS ISSUE



**Annual subscription is: home, 57s 6d, overseas, 65s, single copies 1s 9d (by post 2s)**

Chemical Age
incorporating
PETROCHEMICALS and POLYMERS

BOUVERIE HOUSE · 154 FLEET STREET · LONDON · EC4

# PLASTICS IN FRANCE

THE plastics industry in France has come a long way since just before the second world war when the annual production amounted to some 12,000 tonnes to the present situation of about 330,000 tonnes produced in 1960, and an expected production of 400,000 tonnes in 1961.

As in all industrial countries of the world, the chemical industry in France has shown an exceptionally rapid growth, and, within the industry, the growth of synthetic organic chemicals is noticeably ahead. This is largely due to the rise in plastics, fibres and more recently synthetic rubber production.

The factors which have influenced the growth of the French plastics industry have naturally been more or less similar to those encountered elsewhere, but the ease of obtaining practically unlimited quantities of raw materials in France has undoubtedly been one of the most important factors. Prices are often relatively low and will continue to diminish.

Steel production, which reached 17 million tonnes in 1960, has meant more coke-oven gas. A peculiarity of the coke-oven plants in France is that they are very often associated with synthetic ammonia plants. The removal of hydrogen for ammonia production leaves methane and ethylene fractions for further use. The percentage of ethylene from certain available coals may be as high as 3% of the gas.

Large industrial organisations are still developing around the coal fields in Northern and Eastern France—in the Lorraine coalfields for example. The French collieries are directed towards an efficient use of the coal chemicals in order to take up the excess production of coal efficiently. The disadvantage of coal as a source of raw materials for plastics is that the coal products are limited by steel production, and it is on petroleum derivatives that France, together with other industrial countries, will rely increasingly for raw materials. Chemical industries are growing up around refineries, and those of the Berre area and the lower Seine and lower Loire districts are particularly important. These produce olefins, diolefins, benzene, xylenes and cumene.

The opportunities of setting up a large scale petrochemical industry are also greatly enhanced by the natural gas deposits at Lacq and the planned Saharan-France pipeline. In 1960 the Lacq field produced 60,000 million cu. ft. of refined gas after extraction of 800,000 tonnes of sulphur. In 1961 the production will be almost doubled. This provides a source of ethylene, acetylene, methanol, formaldehyde and urea. Up to now p.v.c. has been produced from acetylene obtained entirely from calcium carbide but in the Lacq plant 30,000 tonnes of acetylene will be produced by methane cracking.

Plastics production in France has a present turnover of £70 million and is divided between about 30 firms. Heading the list is p.v.c., of which 110,000 tonnes were produced in 1960. About 25% of p.v.c. produced is exported. The polystyrene figure for 1960 is expected to be 40,000 tonnes and that for polythene 35,000 tonnes.

Among the new plants for plastics production is the high pressure polythene plant of Compaigne Française de Raffinage and El Paso Natural

(*Continued on page 730*)

# U.K. Sulphuric Acid Demand for Phosphatic Fertilisers Down, Use for Titanium Oxide Up

PRODUCTION of sulphuric acid in the first quarter of 1961 totalled 681,907 tons, of which 574,260 was produced by the contact processes. During the period, 91.1% of contact capacity was in use, compared with 79.8% for chamber and tower.

Consumption of acid during January-March totalled 690,856 tons, compared with 691,229 tons in the previous quarter and 700,193 tons in the first quarter of 1960. Use of acid in superphosphates and other phosphatic fertilisers was down 16,000 tons compared with the previous period, while demand for acid in titanium oxide rose by 6,600 tons.

The following tables, compiled by the National Sulphuric Acid Association, do not include Government plants.

### SULPHURIC ACID AND OLEUM
### (1 January to 31 March)

| Tons | 100% $H_2SO_4$ (New Acid) Contact Tons | Chamber & Tower Tons | Total Tons |
|---|---|---|---|
| Stock 1 Jan. ... ... | 76,392 | 23,597 | 99,989 |
| Production ... ... | 574,260 | 107,648 | 681,908 |
| | 650,652 | 131,245 | 781,897 |
| Stock 31 Dec. ... | 76,722 | 21,690 | 98,412 |
| Apparent Use ... | 573,930 | 109,555 | 683,485 |
| Total capacity represented (tons/quarter) | 630,610 | 134,840 | 765,450 |
| Per cent of capacity in use ... ... | 91.1 | 79.8 | 89.1 |

### U.K. CONSUMPTION

| Trade Uses | Jan.-March 1961 Tons 100% $H_2SO_4$ | Oct.-Dec. 1960 |
|---|---|---|
| Acids—organics & misc. ... | 10,177 | 9,954 |
| Accumulators ... ... ... | 3,282 | 3,420 |
| Agricultural purposes ... ... | 476 | 910 |
| Bromine ... ... ... | 8,068 | 6,694 |
| Clays (fuller's earth, etc.) ... | 4,777 | 3,050 |
| Copper pickling ... ... | 802 | 652 |
| Dealers ... ... ... | 3,210 | 3,390 |
| Dichromate & chromic acid ... | 6,482 | 6,002 |
| Drugs & fine chemicals ... | 5,589 | 5,115 |
| Dyestuffs & intermediates ... | 25,884 | 26,258 |
| Explosives ... ... ... | 2,674 | 2,374 |
| Export ... ... ... ... | 1,220 | 1,681 |
| Glue, gelatine & size ... ... | 116 | 100 |
| Hydrochloric acid ... ... | 14,211 | 14,493 |
| Hydrofluoric acid ... ... | 3,973 | 4,045 |
| Iron pickling (inc. tin plate) ... | 31,912 | 34,361 |
| Leather ... ... ... | 988 | 1,000 |
| Lithopone ... ... ... | 1,644 | 2,342 |
| Metal extraction ... ... | 726 | 617 |
| Oil refining & petroleum products ... ... ... ... | 20,212 | 18,415 |
| Oils (vegetable) ... ... | 2,298 | 2,398 |
| Paper, etc. ... ... ... | 2,332 | 3,035 |
| Phosphates (industrial) ... | 777 | 975 |
| Plastics, n.e.s. ... ... ... | 14,786 | 17,288 |
| Rayon & transparent paper ... | 64,647 | 67,725 |
| Sewage ... ... ... ... | 3,265 | 3,072 |
| Soap, glycerine & detergents ... | 32,457 | 31,024 |
| Sugar refining ... ... ... | 197 | 381 |
| Sulphate of ammonia ... ... | 76,521 | 75,994 |
| Sulphates of copper, nickel, etc. | 4,499 | 4,228 |
| Sulphate of magnesium ... | 47 | 44 |
| Superphosphates & other phosphatic fertilisers ... ... | 172,680 | 156,468 |
| Tar & Benzole ... ... ... | 5,371 | 6,055 |
| Textile uses ... ... ... | 4,601 | 4,193 |
| Titanium dioxide ... ... | 112,759 | 119,379 |
| Unclassified ... ... ... | 47,196 | 54,097 |
| Total ... ... ... | 690,856 | 691,229 |

*Note:* re acid production, raw material used and trade uses of acid, all Government plants are excluded.

# *Science Museum Will Need Aid from Chemical Industry for Expansion*

ERECTION of a new centre block at the Science Museum, due for completion later this year, will not mean a move for the Chemistry Department, but it will mean big expansion for the department. The space for pure chemistry is to be increased by some 200% to about 10,000 sq. ft. and it is hoped to complete the industry chemistry gallery. Both these projects will call for aid from industry comparable to the £50,000 to £70,000 that the iron and steel, gas and electric power industries have each contributed in recent years for the complete reorganisation of the galleries concerned.

This is stated by Mr. Frank Greenaway, deputy keeper of the Chemistry Department writing on 'Chemistry at the Science Museum' in the current issue of the Royal Institute of Chemistry *Journal*. The department is divided into pure chemistry, industrial chemistry and metallurgy with glass technology.

Mr. Greenaway says that some firms in the chemical and scientific instrument industries have already shown interest and donations have reached the £30,000 mark. Promises of material aid in the form of gifts of apparatus and equipment represent many thousands of pounds more. There is, therefore, every prospect that the chemical industry will eventually match other industries in its support for the Museum.

In its exhibits, the department has decided to concentrate on those aspects of chemistry that can be illustrated by means of apparatus or which can be interpreted through visual or mechanical analogies (valency, molecular structure) or which show distinct visual effects (indicators, photochemistry). A "very substantial space" is to be allotted to analytical chemistry; in addition to showing modern laboratory practice in a realistic setting, two other laboratories are to be built, one based on a number of textbooks between 1795 and 1805. The other will be a reconstruction of a complete assayer's laboratory such as would have operated in the mining areas of Central Europe; it will be based on Ercker's 'Treatise on Ores and Assaying' of 1574.

Biochemistry is also to be given more space in the expansion.

## *Letter to the Editor*

### World Survey of Phosphate Rock

SIR,—We have read with great interest your report of the Seventh Graham Clark Lecture by H.R.H. the Duke of Edinburgh at the recent meeting of the Institution of Civil Engineers when he stressed the need to develop the large mineral resources of the Commonwealth (see CHEMICAL AGE, 22 April, p. 659).

We consider it an opportune moment to draw your attention to our forthcoming six volume publication entitled 'World Survey of Phosphate Rock Deposits'. The survey has been compiled following four years' research which has been supported by visits to phosphate deposits in various parts of the world including most of those in the Commonwealth. The presentation of data on reserves and quality of ores, and where applicable, on details of exploitation, beneficiation, annual production, etc., should provide a valuable aid and perhaps even a stimulus to the development of known and potential resources of this essential and non-replaceable raw material.

Yours, etc.,

J. M. LANCASTER,
*Managing Director.*

The British Sulphur Corporation Ltd.,
London W.1.

## Elliott-Automation Forms Swedish Subsidiary

A SWEDISH subsidiary company, A.B. Elliott-Automation, has been formed by Elliott-Automation Ltd. Mr. J. W. Grant, manager of the Industrial Weighing Division of Elliott Brothers (London) Ltd., a member of the Elliott-Automation Group, has recently been to Stockholm to establish the new company and to consolidate the group's existing interests there. He received the assistance of A.B. Termostatik, the Swedish subsidiary of the Rheostatic Co. Ltd., another member company of the E-A Group.

Elliott-Automation companies have built up a substantial volume of trade with Sweden, particularly in connection with automatic control equipment for the Swedish paper-making industry and the nuclear power programme.

Elliott-Automation Ltd. already has extensive interests in France and other countries in the European Common Market, including Holland and Germany.

## Coke-oven Benzole Output Higher by 5%

Gas industry production of crude benzole in the nine months ended December 1960 totalled 18.1 million gall., an increase of 5.2% over the April-December 1959 figure of 17.2 million gall. Crude tar production in the 1960 period totalled 1,196,000 tons, a fall of 1.3% on the comparable 1959 total of 1,212,000 tons.

*Project News*

# FLUOR AWARDED CONTRACT FOR SWEDISH OIL CRACKING PLANT

DETAILED engineering and procurement of Svenska Esso's £7 m. steam cracking plant to be erected at Stenungsund, Sweden, will be carried out in London by **Fluor Engineering and Construction Co. Ltd.** Work on these two phases of the project has already started and construction is expected to commence later this summer. The steam cracker, overall design of which was undertaken by Esso Research and Engineering, is for the production and recovery of ethylene and butadiene. It will form the core of the overall Stenungsund petrochemical project, first details of which were given in CHEMICAL AGE, 12 November 1960, page 821, and is scheduled to go on stream on 1 July 1963.

Ethylene from the cracker will be supplied to the polythene plant which will be jointly owned by Union Carbide and the Swedish concern Fosfatbolaget. Esso will also supply the ethylene oxide plant which will be owned by another Swedish firm, Mo och Domsjo.

Cost of the cracker and the first phase of the polythene and ethylene oxide plants has been given as £13.5 m.

## New Shell Ethylene Plant Proceeds Apace

● WORK on the new section of the No. 1 ethylene plant of **Shell Chemical Co. Ltd.** at Carrington is proceeding and is scheduled for completion not later than July 1962 (see C.A., 29 October, 1960, p. 725). The new section of plant is being designed, engineered, procured and constructed by the **Lummus Co.**

The No. 1 ethylene plant at Carrington was built some 12 years ago and included a low temperature distillation section constructed largely in non-ferrous materials, the insulation being obtained by totally enclosing the vessels, columns, etc., into 'cold boxes'. As a result of later developments in materials of construction it was decided to dismantle the whole of this section of the plant and replace it by a free-standing distillation train, using alloy and stainless steels for all low temperature vessels, columns, heat exchangers, and pipework, individually insulated as required in the normal manner.

## Darchem Get Contract for N.Z. Geothermal Project

● DARLINGTON plant of **Chemical and Insulating Co. Ltd.** is now working full-time producing 85% super-magnesia insulation for the geothermal project which uses the hot springs at Wairakei, North Island, New Zealand, to generate power. This was stated by Mr. D. J. Grant, managing director, at the Engineering, Marine, Welding and Nuclear Energy Exhibition in London last week. He added that Aiton and Co., Derby, were supplying and erecting three 30 in. transmission pipelines, each two miles long, to convey steam from boreholes to the power station.

Aiton have placed the order for insulation with Chemical and Insulating Co., who are also to supply insulation materials for the generating station.

## I.C.I. Paint Research Laboratories

● RECENTLY completed is a £400,000 block of laboratories which will accommodate a substantial proportion of **I.C.I.'s** Paints Research Department. The building includes specially designed benches, a carefully planned fume extract and service distribution system and rooms with controlled humidity and temperature for testing the physical properties of paint films.

## B.D.H. Laboratory Chemicals Project at Poole

● A COMPREHENSIVE laboratory chemicals programme at Poole, which is expected to be completed by the middle of 1962, will give **British Drug Houses Ltd.** the capacity to more than double present business, Mr. G. C. R. Eley, chairman of the company, told shareholders in his annual statement.

At the same time, a statement issued by John Laing Construction Ltd., the building contractors, reveals that work is in progress on a £523,000 project for the construction of a new four-storey warehouse and office building for the Laboratory Chemicals Division of British Drug Houses Ltd. at Poole, and that the building, to be completed in a contract period of 14 months, is the third and final stage of a £1 million development programme extending over a site of some six acres.

The new block, 340 ft. long and over 100 ft. wide, will incorporate packaging, packed stock and despatch departments, together with the Division's home and export sales and administrative offices. Space released on the present factory site by the transfer of warehouses and offices will be used for manufacture, for new development and biochemical laboratories, and for extensions to the analytical laboratory.

## Turbo-alternators for Australian Chemical Plants

● Two contracts for turbine power plant for Australia—one from Kodak (Australasia) Pty. Ltd. and the other from Union Carbide (Australia) Ltd., Chemical Division, Sydney—have been received by **W. H. Allen Sons and Co. Ltd.**, Bedford. Total value of the two contracts is some £83,000.

The order from Union Carbide is for plant to supply a.c. power to meet the the works load, in parallel with the local electricity supply, and variable voltage d.c. power for the production of chlorine by electrolysis. The exhaust process steam is to be used for various chemical product manufacture. The contract is a 1,400 kw. back-pressure turbo-alternator set, together with transformer, rectifier, switchgear, etc.

The Kodak order is for a 1,200 kw. self-contained double pass-out condensing turbo-alternator set, comprising an L.D.C. alternator.

## Extension to Bowater Drum Factory

● WORK is in hand on the extension of the Disley, Ches., factory of the Fibre Drum Division of **Bowater Packaging Ltd.** The extension, which is due to be completed in August, will provide an additional 27,000 sq. ft. of production space. This is the fifth extension to the factory since it was acquired in 1949.

After the pilot production line for the Supakask fibre/steel drum was installed in 1954, output of this drum increased rapidly until in 1958 production was transferred to a new 30,000 sq. ft. factory on another part of the site.

# *I.C.I. Subsidiary to Close Down Explosives Factories*

MANUFACTURE of industrial explosives and assembly of detonators at the Hawkley Hall and Earlestown factories respectively of Colliery Explosives Co. Ltd., a subsidiary of I.C.I., is to cease not later than the end of 1961. The decision to close the factories has been made for technical reasons after a comprehensive analysis of the explosives industry in the U.K. and the trends of market development at home and abroad, according to Mr. L. Hall, chairman of the company and a joint managing director of the Nobel Division.

There has been a decline in the U.K. market for explosives and accessories since 1958 and, as the Hawkley factory has no plant for making nitroglycerine which has to be transported in the form of a paste from Ardeer, there is an obvious advantage in concentrating the manufacture of nitroglycerine powders at the Ardeer factory. Non-nitroglycerine powders are manufactured at the Hawkley factory at the Nobel Division factory at Roburite.

The Hawkley and Earlestown factories employ 140 men and women between them. Attempts will be made to place male employees willing to accept transfer to other parts of I.C.I. which might have suitable vacancies.


★ RESIGNATION of the entire board of STANIC, the oil company half owned by ANIC, of the ENI-AGIP Italian State oil concern and half by Standard Oil of New Jersey, at the end of last month, has been followed by the filing of $20.5 million damage claim by STANIC against Esso Research and Engineering Co. of Newark, U.S. It is alleged that the catalytic reforming units at STANIC's Leghorn and Bari refineries are not performing to designed ratings.

Esso Research last week stated that they were convinced that the Hydroformer they installed at Leghorn will eventually meet designed performance. In the case of the power reformer at Bari, Esso Research and Engineering state they were told in July 1960 that the unit was not meeting specification. Esso add that in October they submitted a proposal which it was believed would substantially resolves the difficulty.

Apparently no reply has been received to this proposal or to a subsequent amplification sent in March this year. Esso Research and Engineering have expressed disappointment at finding a suit brought against them without further discussion.

★ A BATTLE is expected when the Canadian Tariff Board shortly holds its public hearings on hydrocarbons. On the one hand, Polymer Corporation of Sarnia, Canada's biggest benzene user, will seek duty-free supplies, while the aromatic producers are looking for protection. It has been recommended that benzene, toluene and xylenes should come under a 15% preferential rate and a 20% most-favoured-nation category.

Coke-oven producers, as well as British-American Oil, where aromatics plant at Montreal is due on stream soon, are supporting these rates, while at least one coke-oven operator is reported to be satisfied with half the rates mentioned. Imperial Oil wish to retain the present duty of ¼ c./gall.

★ BROMINE and magnesium compounds apart, quite a number of chemists have been fascinated by the sea as a vast potential source of chemicals —now some encouraging results have been obtained in extracting drugs from marine vegetation and animal life. Thus, carrageenin, derived from the seaweed known as Irish moss, has been shown to be useful in treating peptic ulcers; an algae derivative, lamarin sulphate, may deserve additional study as an anti-coagulant; a poison called holothurin has been derived from sea cucumbers and, when applied as an extract under laboratory conditions, lowers the growth potential of cells in mouse cancer.

In fact, the U.S. Manufacturing Chemists' Association believes the sea may prove to be the world's largest medicine chest. Extracts not only from marine plants but also from fish have proved promising: material from the entrails of puffer fish is being studied for its possibilities in cancer therapy, while another fish, the menhaden, provides oil from which is derived the highly unsaturated fatty acids now being used for research in atherosclerosis. Even poisonous fish are yielding data useful in chemotherapy, so that the future possibilities of drugs from the sea may prove to be no fisherman's tale after all.

★ AN export achievement against all the odds—and one which should encourage companies that have fought shy of overseas markets—reaches me from Mr. R. Davis Millar, managing director of Aeropreen Ltd., the High Wycombe firm that has been setting the pace in the polyether foam field. Starting from negligible quantities a year ago, Aeropreen's export graph rose rapidly to 12% of total production.

Mr. Millar tells me after two days at the Milan Trade Fair he brought back orders worth more than £7,000. The firm's Milan agents indicated at the close of the fair that the final figure would be around £25,000. This is a notable success in view of the high freight on bulk materials like polyether, plus the unfavourable tariffs against a U.K. product. It proves what I have always believed—that any British company offering high quality at competitive prices can overcome the export hurdles.

Before the end of June, Aeropreen will have taken their products to the British Trade Fair in Moscow, at Interzum, Cologne, and at the Poznan Fair.

★ PLEA for the creation of an industrial code in Britain to help [illegible] down the number of strikes was made by Lord Fleck at the annual meeting last week of the Tyneside Chamber of Commerce. This appeal should carry much weight coming as it does from a man who did much to further the cause of industrial harmony while chairman of I.C.I.

Lord Fleck believes the number of industrial disputes in this country shows that industrial philosophy is not developing satisfactorily. The idea of striking exists in all branches of society and he suggests that an industrial code be prepared jointly by trades unions and employers, by a Government committee of enquiry or by universities with industrial relations departments.

Keystone of this code would be consultation—so highly developed within I.C.I. Although trade unions are of the highest importance in such a plan, there is a need in industry for more direct contact with employees. After setting up an industrial code Lord Fleck sees as the next step the creation of a sense of financial partnership.

★ THE new technique of filament-wound reinforced plastics—developed to provide a stronger-than-metals material for rocketry—is arousing interest as a material for chemical plant and equipment. Tensile strength of reinforced plastics that have been filament wound is 150,000 p.s.i., compared with structural steel, 40,000 p.s.i.; aluminium, 80,000 p.s.i.; titanium, 80,000-105,000 p.s.i.; and heat-treated steel, 120,000 p.s.i.

It was reported at a recent conference on filament winding held in California that a number of U.S. companies are producing tanks and pipes made by filament winding of epoxy resins, bis-phenol-A polyester resin and Buton resin. Dow Chemical and Union Carbide are reported to be working on resins giving greater temperature resistance—the present temperature range is between 300 and 500°F.

In the fabrication process, unwoven filaments are fed from a spool through an impregnation bath of resin and then wound on to a mandrel.

★ OUR apologies to Sir Eric Ashby. Observant readers of CHEMICAL AGE last week might have wondered if Clare College, Cambridge, had been the subject of a take-over bid by a well-known financier. In referring to the presentation to Sir Eric of a scroll marking his hon. fellowship of the Royal Institute of Chemistry, it was stated that he is Master of 'Clore College'.

★ IN a new use for polyester film, pioneered by the Forestry Commission research branch in Edinburgh, Terylene bags are used to isolate female flowers when control-pollinating pine and larch trees. They are placed over the branch bearing the buds and pollination is effected by a hypodermic syringe when the bud breaks into flower.

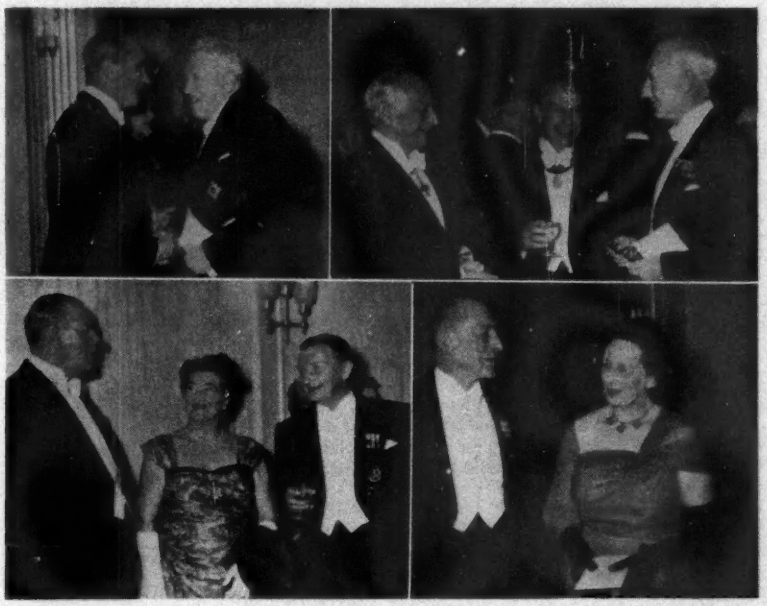
Polythene bags are not suitable because the combined heat and condensation generated inside caused heavy losses of flowers. The Terylene bags, on the other hand, made from non-woven Terylene and incorporating a p.v.c. window, [illegible] entirely satisfactory. They are [illegible] y Duraweld, Scarborough.

Alembic

# I.CHEM.E. ANNUAL DINNER IN LONDON

## *Engineering Research—'Provide the Means, We'll Supply Men', Says W. K. Hutchison*

THE annual dinner of the Institution of Chemical Engineers was held at the Park Lane Hotel, London, on 25 April, following the annual general meeting and presidential address (reported in CHEMICAL AGE last week, p. 695). At the dinner, some 380 members and guests were received by the president, Mr. W. K. Hutchison, C.B.E., and Mrs. Hutchison. The toast "The Institution of Chemical Engineers" was proposed by Mr. S. P. Chambers, C.B., C.I.E., chairman of Imperial Chemical Industries Ltd. It was responded to by the president, who proposed the toast of "Our Guests". Sir Keith Murray, chairman of the University Grants Committee, responded on behalf of the guests.



**I.Chem.E. annual dinner personalities: l. to r. (top): W. K. Hutchison (retiring I.Chem.E. president); Lord Fleck (president, Society of Chemical Industry); Sir Hugh Beaver (past-president, I.Chem.E.); S. P. Chambers (I.C.I. chairman); Sir Henry Jones (chairman, Gas Council). Bottom: C. E. Spearing (newly elected I.Chem.E. president); Mrs. Spearing; Sir William Garrett (chairman, A.B.C.M.; Dr. H. J. T. Ellingham (secretary, R.I.C.) and Mrs. Ellingham**

Other guests included Sir William Garrett, M.B.E., chairman of the Association of British Chemical Manufacturers, and Lady Garrett; Lord Fleck, president of the Society of Chemical Industry; Mr. Norman Fraser, chairman of the British Chemical Plant Manufacturers' Association; Mr. Denzil Freeth, Parliamentary Secretary, Minister for Science; Sir Harry Melville, K.C.B., F.R.S., Secretary of the D.S.I.R., and Lady Melville; and other distinguished representatives of industry, the professional institutions, and scientific education and research.

In his speech, Mr. Hutchison spoke of the need for a better understanding of the engineer's role by the public at large: "Official recognition of the importance of engineering to the national well being does little to eradicate the social perception of an engineer as a man of few words—those usually rude—and less culture, his status symbol a slide rule."

But, Mr. Hutchison asked, was it possibly engineers themselves who were to blame for public misunderstanding? From time to time, it was deplored that engineering science was divided into separate disciplines each with its own governing body, and that there were prospects of further fission when fusion would be more seemly. Could not the engineering institutions take some concerted action to publicise the ideals and achievements of engineers in every field of human endeavour?

Mr. Hutchison continued: "The appointment of a Minister for Science was a step forward in the recognition by Government of the place that Science should occupy in the deliberations of our legislators, and we warmly welcome the newly appointed Parliamentary Secretary, Mr. Denzil Freeth. One of his first answers to questions was that the volume and quality of research in engineering was inadequate and would not be solved until the subject attracted a due proportion of the best intellects of the country. I recommend this sentiment to Sir Harry Melville, the Secretary of D.S.I.R., whom we are delighted to have with us tonight, in the firm belief that if he can provide the means we can provide the men."

At the conclusion of his speech, Mr. Hutchison handed over the insignia of his office to Mr. C. E. Spearing, whose election as president was reported last week.

## Epoxy Soya Bean Oil by New Celanese Process

EPOXIDISED soya bean oil, made by a process new to the U.K. that uses peracetic acid as the direct expoxidising agent on a high quality soya bean oil, is now available from British Celanese Ltd., Foleshill Road, Coventry. Celanese peracetic acid—production of which was first disclosed in CHEMICAL AGE, 4 March—is the first to be produced in this country from a petroleum source, is made by another new process that avoids by-product formation. It is therefore particularly suitable for the production of epoxy compounds with a high oxirane oxygen content.

Processes, both for peracetic acid and epoxidised soya bean oil, have been developed by British Celanese in their Coventry research laboratories.

Celanese epoxy soya bean oil, a high-quality epoxy stabiliser and non-migratory plastisicer for p.v.c., is supplied in 5 or 45 gall. drums and in road tankers.

## Trunk Pipelines Bill Withdrawn

THE privately-sponsored Trunk Pipelines Bill was withdrawn last week following the view put by Mr. Richard Wood, Minister of Power, that such a project should await the kind of procedures to be laid down by the proposed Government Bill. It is hoped that this Bill, which will give adequate public control of pipeline development, will be presented in the Parliamentary session beginning in November. It is the Government's intention that pipeline projects should largely be handled by private enterprise.

The public enquiry system is envisaged to deal with objections to pipeline routes.

Trunk Pipelines Ltd., who sponsored the Bill, are to go ahead with the planning of their proposed pipeline from Canvey to Denham in anticipation of being able to start work when the Government Bill is passed. The company estimates that six months of preparation are necessary before construction could start and that the Canvey-Denham pipeline would take about 12 months to construct; the proposed extension to the Mersey could be completed in a maximum of two years.


★ RESIGNATION of the entire board of STANIC, the oil company half owned by ANIC, of the ENI-AGIP Italian State oil concern and half by Standard Oil of New Jersey, at the end of last month, has been followed by the filing of $20.5 million damage claim by STANIC against Esso Research and Engineering Co. of Newark, U.S. It is alleged that the catalytic reforming units at STANIC's Leghorn and Bari refineries are not performing to designed ratings.

Esso Research last week stated that they were convinced that the Hydroformer they installed at Leghorn will eventually meet designed performance. In the case of the power reformer at Bari, Esso Research and Engineering state they were told in July 1960 that the unit was not meeting specification. Esso add that in October they submitted a proposal which it was believed would substantially resolves the difficulty.

Apparently no reply has been received to this proposal or to a subsequent amplification sent in March this year. Esso Research and Engineering have expressed disappointment at finding a suit brought against them without further discussion.

★ A BATTLE is expected when the Canadian Tariff Board shortly holds its public hearings on hydrocarbons. On the one hand, Polymer Corporation of Sarnia, Canada's biggest benzene user, will seek duty-free supplies, while the aromatic producers are looking for protection. It has been recommended that benzene, toluene and xylenes should come under a 15% preferential rate and a 20% most-favoured-nation category.

Coke-oven producers, as well as British-American Oil, where aromatics plant at Montreal is due on stream soon, are supporting these rates, while at least one coke-oven operator is reported to be satisfied with half the rates mentioned. Imperial Oil wish to retain the present duty of ¼ c./gall.

★ BROMINE and magnesium compounds apart, quite a number of chemists have been fascinated by the sea as a vast potential source of chemicals —now some encouraging results have been obtained in extracting drugs from marine vegetation and animal life. Thus, carrageenin, derived from the seaweed known as Irish moss, has been shown to be useful in treating peptic ulcers; an algae derivative, lamarin sulphate, may deserve additional study as an anti-coagulant; a poison called holothurin has been derived from sea cucumbers and, when applied as an extract under laboratory conditions, lowers the growth potential of cells in mouse cancer.

In fact, the U.S. Manufacturing Chemists' Association believes the sea may prove to be the world's largest medicine chest. Extracts not only from marine plants but also from fish have proved promising: material from the entrails of puffer fish is being studied for its possibilities in cancer therapy, while another fish, the menhaden, provides oil from which is derived the highly unsaturated fatty acids now being used for research in atherosclerosis. Even poisonous fish are yielding data useful in chemotherapy, so that the future possibilities of drugs from the sea may prove to be no fisherman's tale after all.

★ AN export achievement against all the odds—and one which should encourage companies that have fought shy of overseas markets—reaches me from Mr. R. Davis Millar, managing director of Aeropreen Ltd., the High Wycombe firm that has been setting the pace in the polyether foam field. Starting from negligible quantities a year ago, Aeropreen's export graph rose rapidly to 12% of total production.

Mr. Millar tells me after two days at the Milan Trade Fair he brought back orders worth more than £7,000. The firm's Milan agents indicated at the close of the fair that the final figure would be around £25,000. This is a notable success in view of the high freight on bulk materials like polyether, plus the unfavourable tariffs against a U.K. product. It proves what I have always believed—that any British company offering high quality at competitive prices can overcome the export hurdles.

Before the end of June, Aeropreen will have taken their products to the British Trade Fair in Moscow, at Interzum, Cologne, and at the Poznan Fair.

★ PLEA for the creation of an industrial code in Britain to help keep down the number of strikes was made by Lord Fleck at the annual meeting last week of the Tyneside Chamber of Commerce. This appeal should carry much weight coming as it does from a man who did much to further the cause of industrial harmony while chairman of I.C.I.

Lord Fleck believes the number of industrial disputes in this country shows that industrial philosophy is not developing satisfactorily. The idea of striking exists in all branches of society and he suggests that an industrial code be prepared jointly by trades unions and employers, by a Government committee of enquiry or by universities with industrial relations departments.

Keystone of this code would be consultation—so highly developed within I.C.I. Although trade unions are of the highest importance in such a plan, there is a need in industry for more direct contact with employees. After setting up an industrial code Lord Fleck sees as the next step the creation of a sense of financial partnership.

★ THE new technique of filament-wound reinforced plastics—developed to provide a stronger-than-metals material for rocketry—is arousing interest as a material for chemical plant and equipment. Tensile strength of reinforced plastics that have been filament wound is 150,000 p.s.i., compared with structural steel, 40,000 p.s.i.; aluminium, 80,000 p.s.i.; titanium, 80,000-105,000 p.s.i.; and heat-treated steel, 120,000 p.s.i.

It was reported at a recent conference on filament winding held in California that a number of U.S. companies are producing tanks and pipes made by filament winding of epoxy resins, bis-phenol-A polyester resin and Buton resin. Dow Chemical and Union Carbide are reported to be working on resins giving greater temperature resistance—the present temperature range is between 300 and 500° F.

In the fabrication process, unwoven filaments are fed from a spool through an impregnation bath of resin and then wound on to a mandrel.

★ OUR apologies to Sir Eric Ashby. Observant readers of CHEMICAL AGE last week might have wondered if Clare College, Cambridge, had been the subject of a take-over bid by a well-known financier. In referring to the presentation to Sir Eric of a scroll marking his hon. fellowship of the Royal Institute of Chemistry, it was stated that he is Master of 'Clore College'.

★ IN a new use for polyester film, pioneered by the Forestry Commission research branch in Edinburgh, Terylene bags are used to isolate female flowers when control-pollinating pine and larch trees. They are placed over the branch bearing the buds and pollination is effected by a hypodermic syringe when the bud breaks into flower.

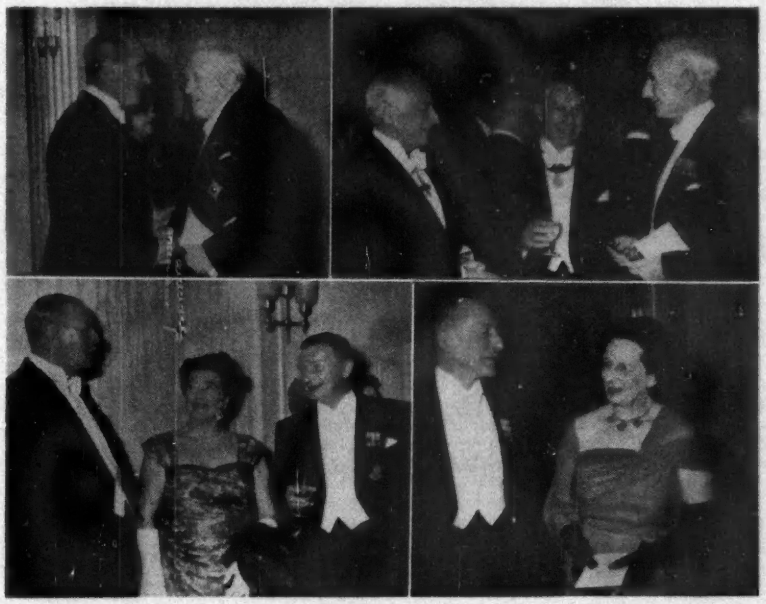
Polythene bags are not suitable because the combined heat and condensation generated inside caused heavy losses of flowers. The Terylene bags, on the other hand, made from non-woven Terylene and incorporating a p.v.c. window, have proved entirely satisfactory. They are made by Duraweld, Scarborough.

Alembic

# I.CHEM.E. ANNUAL DINNER IN LONDON

## *Engineering Research—'Provide the Means, We'll Supply Men', Says W. K. Hutchison*

THE annual dinner of the Institution of Chemical Engineers was held at the Park Lane Hotel, London, on 25 April, following the annual general meeting and presidential address (reported in CHEMICAL AGE last week, p. 695). At the dinner, some 380 members and guests were received by the president, Mr. W. K. Hutchison, C.B.E., and Mrs. Hutchison. The toast "The Institution of Chemical Engineers" was proposed by Mr. S. P. Chambers, C.B., C.I.E., chairman of Imperial Chemical Industries Ltd. It was responded to by the president, who proposed the toast of "Our Guests". Sir Keith Murray, chairman of the University Grants Committee, responded on behalf of the guests.



**I.Chem.E. annual dinner personalities: l. to r. (top): W. K. Hutchison (retiring I.Chem.E. president); Lord Fleck (president, Society of Chemical Industry); Sir Hugh Beaver (past-president, I.Chem.E.); S. P. Chambers (I.C.I. chairman); Sir Henry Jones (chairman, Gas Council). Bottom: C. E. Spearing (newly elected I.Chem.E. president); Mrs. Spearing; Sir William Garrett (chairman, A.B.C.M.; Dr. H. J. T. Ellingham (secretary, R.I.C.) and Mrs. Ellingham**

Other guests included Sir William Garrett, M.B.E., chairman of the Association of British Chemical Manufacturers, and Lady Garrett; Lord Fleck, president of the Society of Chemical Industry; Mr. Norman Fraser, chairman of the British Chemical Plant Manufacturers' Association; Mr. Denzil Freeth, Parliamentary Secretary, Minister for Science; Sir Harry Melville, K.C.B., F.R.S., Secretary of the D.S.I.R., and Lady Melville; and other distinguished representatives of industry, the professional institutions, and scientific education and research.

In his speech, Mr. Hutchison spoke of the need for a better understanding of the engineer's role by the public at large: "Official recognition of the importance of engineering to the national well being does little to eradicate the social perception of an engineer as a man of few words—those usually rude—and less culture, his status symbol a slide rule."

But, Mr. Hutchison asked, was it possibly engineers themselves who were to blame for public misunderstanding? From time to time, it was deplored that engineering science was divided into separate disciplines each with its own governing body, and that there were prospects of further fission when fusion would be more seemly. Could not the engineering institutions take some concerted action to publicise the ideals and achievements of engineers in every field of human endeavour?

Mr. Hutchison continued: "The appointment of a Minister for Science was a step forward in the recognition by Government of the place that Science should occupy in the deliberations of our legislators, and we warmly welcome the newly appointed Parliamentary Secretary, Mr. Denzil Freeth. One of his first answers to questions was that the volume and quality of research in engineering was inadequate and would not be solved until the subject attracted a due proportion of the best intellects of the country. I recommend this sentiment to Sir Harry Melville, the Secretary of D.S.I.R., whom we are delighted to have with us tonight, in the firm belief that if he can provide the means we can provide the men."

At the conclusion of his speech, Mr. Hutchison handed over the insignia of his office to Mr. C. E. Spearing, whose election as president was reported last week.

## Epoxy Soya Bean Oil by New Celanese Process

EPOXIDISED soya bean oil, made by a process new to the U.K. that uses peracetic acid as the direct expoxidising agent on a high quality soya bean oil, is now available from British Celanese Ltd., Foleshill Road, Coventry. Celanese peracetic acid—production of which was first disclosed in CHEMICAL AGE, 4 March—is the first to be produced in this country from a petroleum source, is made by another new process that avoids by-product formation. It is therefore particularly suitable for the production of epoxy compounds with a high oxirane oxygen content.

Processes, both for peracetic acid and epoxidised soya bean oil, have been developed by British Celanese in their Coventry research laboratories.

Celanese epoxy soya bean oil, a high-quality epoxy stabiliser and non-migratory plastisicer for p.v.c., is supplied in 5 or 45 gall. drums and in road tankers.

## Trunk Pipelines Bill Withdrawn

THE privately-sponsored Trunk Pipelines Bill was withdrawn last week following the view put by Mr. Richard Wood, Minister of Power, that such a project should await the kind of procedures to be laid down by the proposed Government Bill. It is hoped that this Bill, which will give adequate public control of pipeline development, will be presented in the Parliamentary session beginning in November. It is the Government's intention that pipeline projects should largely be handled by private enterprise.

The public enquiry system is envisaged to deal with objections to pipeline routes.

Trunk Pipelines Ltd., who sponsored the Bill, are to go ahead with the planning of their proposed pipeline from Canvey to Denham in anticipation of being able to start work when the Government Bill is passed. The company estimates that six months of preparation are necessary before construction could start and that the Canvey-Denham pipeline would take about 12 months to construct; the proposed extension to the Mersey could be completed in a maximum of two years.

# RESEARCH FOUNDATION TACKLES CANADIAN URANIUM SURPLUS

THE Canadian chemical industry, hitherto an important supplier to the uranium producers of such necessities as chemicals and commercial explosives, may become their customer if some of the ideas of a newly formed Uranium Research Foundation prove economical.

Little more than a year ago Canada led the world in uranium production, but the picture changed drastically when the U.S. Atomic Energy Commission decided not to exercise their option to buy additional quantities of uranium after the expiry of the sales contracts which mostly terminate on 31 March 1962.

The formation of the Canadian Uranium Research Foundation towards the end of 1960 is an attempt to solve the crisis through research.

This is not the first time that a radical change of plan and outlook has been necessary in Canadian industry. Immediately after the first world war the nickel mining industry was faced with a similar situation. Then the research initiated by the International Nickel Co. developed new products requiring nickel. This is an effort the new Foundation hopes to emulate with uranium.

The basic funds of $250,000 a year for the next five years will be provided by the companies backing the Foundation. Some of the funds will go to support research work being done in industrial laboratories which the Foundation feels may be of value to it.

It is foreseen that the industrial uses of uranium and its compounds will depend largely on additions of relatively minor amounts to improve the properties of other materials. Since the annual production of uranium in Canada is approximately 13,000 tons, a variety of uses must be examined. The fields of metallurgy, ceramics, electrical applications and chemicals will be particularly studied.

The potential chemical uses are numerous. Many uranium compounds have possibilities as catalysts, but although a few patents have been granted for such uses, the field is still relatively unexplored.

Uranium compounds have been used as colouring materials and pigments for dyes, lacquers and paints. However, little attention has yet been directed towards their applications in pigments for inks.

Potential electrical uses centre chiefly around the well-known semi-conducting of uranium dioxide. Undoubtedly, other uranium compounds have similar electrical properties. In view of the current need for high temperature semi-conducting devices and efficient thermo-electric materials, study of such applications of uranium compounds could be useful.

Although the Foundation is new, two projects are already under way. One is at U.B.C., involving the use of uranium oxides in refractories, semi-conductors and other ceramic applications. The other project is being undertaken at Ottawa by the Department of Mines and Technical Surveys. It has already resulted in patents being taken out for metallurgical developments. The Ottawa programme is concerned with alloying uranium with steels. It is hoped that the new alloy may prove more resistant to fatigue and to the stress corrosion which normally plagues boilers, tubing and wire cables.

# *Separation of Similar Components by Tailor-made Plastics Films*

SEPARATION of a number of closely related components of a liquid or vapour mixture can be achieved by a tailor-made plastics film, according to the Massachusetts Institute.

It is thought that this work may be an important breakthrough in separations and polymer technology and may have potential industrial uses. Research has demonstrated that polymeric networks formed in the presence of a foreign compound, when suitably extracted to remove the entrapped solute, show sortive selectivity for that compound to others with similar structures.

Films which show enhanced permeability to *p*-xylene relative to *m*- and *o*-xylenes have been made from high and low density polythene. These films also markedly enhanced permeation rates to the xylene isomers relative to conventional or untreated film.

The process consists of swelling the polymer film in a selected component of the mixture to be separated. The swollen film is then heat treated under controlled conditions. High density polythenes appear to respond more markedly to treatment.

The high selectivity of the treated films and their increased liquid and vapour transport rate open up the possibilities of their use for efficient resolution of complex mixtures when separation by conventional methods is difficult or costly.

M.I.T. do not think that this phenomenon is unique to polythene, nor that it applies only to mixtures of xylenes. Instead they think it is a general property of polymeric structures and can be exploited with a large variety of polymeric materials, and for the separation of virtually any gaseous or liquid mixture.

## Record Number at B.C.D.T.A. Annual Lunch

A RECORD number of 470 members and guests attended the annual luncheon of the British Chemical and Dyestuffs Traders' Association, held at the Savoy Hotel, London, on 2 May. Chief guest was the Rt. Hon. Frederick Erroll, M.P., Minister of State, Board of Trade, who spoke of the part which the merchant can play in helping to increase British exports. He thought that, in the chemical field, there was probably more scope for greater co-operation between the smaller manufacturer and the merchanting side of the industry.

Mr. Erroll proposed a toast to "The Association" which was responded to by Mr. G. S. Bache, president of the Association. Mr. Bache dwelt on the Common Market and other export areas and, of South Africa, he said that he did not think the Union's withdrawal from the Commonwealth would have a very great short-term effect on its economy but, in the long term, South Africa might find it difficult to carry on its chemical industry expansion because of the difficulty of obtaining the necessary finance from internal sources.

The toast of "The Guests" was proposed by Mr. Denis F. Waugh, chairman of the B.C.D.T.A., the response being by the Rt. Hon. Lord Mancroft, K.B.E., T.D.

## Plastics in France

(*Continued from page 725*)

Gas Co. which has an annual capacity of 20,000 tonnes a year and is due for completion in 1963 (see CHEMICAL AGE, 3 December 1960, p. 952). Before the end of 1960, a low pressure polythene unit was brought on stream by the Péchiney subsidiary, Société Normande des Matières Plastiques, with an initial output of 7,000 tonnes. Among other interests of Péchiney in the plastics field, is the formation of a company with Dow Chemie, the Swiss subsidiary of Dow Chemical, for the production of polystyrene and p.v.c. by the Dow processes.

The prospects for the French plastics industry are bright. Increasing numbers of petrochemicals plants are being constructed to provide the raw materials (see CHEMICAL AGE, 7 January 1961, p. 12). The value of the petrochemical industry in 1959 was about £19 million and investments between 1960 and 1952 are expected to be about £90 million. These investments will increase petrochemical output by 280,000 tonnes (carbon content) with special emphasis laid on the manufacture of monomers for plastics.

## *Indian Newsletter*

# NEW PLANTS RAISE OUTPUTS OF COKE-OVEN CHEMICALS, PLASTICS

STEADY progress is being made in the planning of new facilities for the production of chemicals, plastics, pharmaceuticals, etc., with technical collaboration of more industrialised countries, both East and West.

*Chemical Plant.* Proposals have been completed for Hungarian technical collaboration in the manufacture of chemical machinery, basic pharmaceuticals, and some items of engineering goods. Manufacture of chemical machinery will be undertaken by a new company to be floated by the New Standard Engineering Co. Capital outlay will be of the order of £300,000. The Nike organisation of Budapest will supply the necessary equipment valued at about £210,000. The factory is expected to go into production by the end of 1961 and will manufacture annually some 400-480 vessels of 100-1,250 litres capacity, glass enamelled mixers, condensers, receivers, evaporating pans and distillation plants.

Indian Chemi-plant Manufacturing Co. has been formed in Bombay to undertake with American collaboration a £1.5 m. project for the manufacture of chemical machinery and plant besides equipment for petroleum, fertiliser and pharmceutical industries. The project envisages the manufacture of complete sulphuric acid, nitric acid and hydrosulphite of soda plants, besides plants for the manufacture of synthetic resins and plastics, pharmaceuticals and organic chemicals. The factory will be located in Bombay.

*Sulphur from Pyrites.* A smelter to produce 400 tons/day of sulphur by the Orkla process from the recently discovered sulphur pyrite ore in the Amjore area of Bihar State is to be set up by the Indian Government with Norwegian technical assistance. An important adjunct to the project will be a 1,000 tons/day sulphuric acid plant. The project is scheduled to be completed by 1963.

India's sulphur needs have gone up fourfold during the last five years—from 50,000 tons in 1955 to 200,000 tons in 1960-61. Almost the entire quantity, valued at over £3.75 m., is imported. It is expected that by 1965-66, when India's sulphur requirements are estimated to be of the order of 600,000-800,000 tons, at least half this quantity will be met from internal production.

*Bhilai Coke Ovens.* With the commissioning of the third and the last coke-oven battery of the Government-owned Bhilai Steel Works, set up in the State of Madhya Pradesh with Soviet collaboration, the plant attained its full production capacity of 1,145,000 tons of coke from 2 million tons of coal. The three Bhilai batteries together will give annually 60,000 tons of by-products including 44,500 tons of tar, 16,300 tons of ammonium sulphate, 100 tons of phenolates, 9,000 tons of light oil and 1,600 tons of crude benzole. All the by-product plants have been completed and commissioned. There is also a sulphuric acid plant which was commissioned a year ago.

- **Hungarian and U.S. technical collaboration for two projects to produce chemical plant in India**
- **Expanded production of polyolefins and other petrochemicals at the new Indo-U.S. plant at Trombay is already in view**
- **Plans to produce p.v.c. are being laid by a number of enterprises; another will make cellulose acetate**
- **Current heavy inorganic chemical projects include sulphur, sulphuric acid, calcium carbide, caustic soda**

*Polyolefins.* The £3.37 m. plant of Union Carbide (India) Ltd. was inaugurated at Trombay (near Bombay), on 11 March by the Indian Minister for Industry. The plant will produce £1.8 m. worth of polyolefins and other products for the plastics industry. The plant has a capacity of 6 m. lb. of polythene, 2.5 m. lb. of processed polythene, 6 m. lb. of butanol, butyl acetate, acetic acid, ethyl acetate, etc., and 3 m. lb. of ethylene dichloride. In collaboration with its associate company, Union Carbide (India) plans to raise its production capacity of polythene to 20 m. lb., and of processed polythene to 5 m. lb.

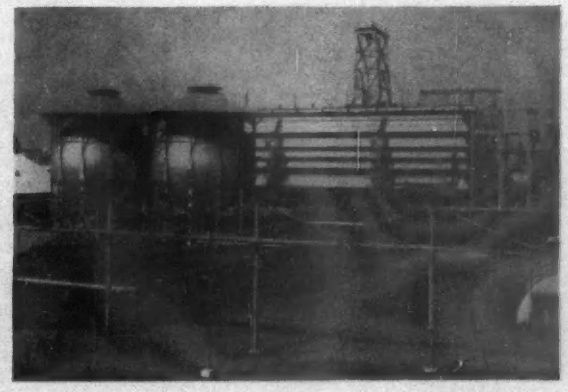
*Calcium Carbide.* Recent expansion of facilities has made the country self-sufficient in calcium carbide. Against the current estimated requirements at 24,000 tons, the industry has an installed capacity of 26,500 tons; in 1958 the capacity was just about 3,500 tons.

At present there are three units producing calcium carbide—one each in the States of West Bengal, Madras and Maharashtra (part of former Bombay State). Two more units, one in Delhi and the other in Kerala, have been licensed. Plant and technical know-how for the Kerala unit (10,000 tons) will be provided by Deutscher Innen and Aussenhandel Investment Export of East Germany. The project, estimated to cost £300,000, will go into production by October 1962. The Delhi unit may, however, take two or three years to start operations.

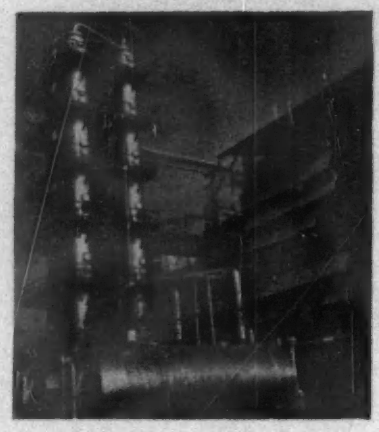
When all these units go into production by 1964, capacity of the order of 48,500 tons is expected to be established. By 1964, Indian demand of calcium carbide from chemical and engineering industries has been estimated at 52,000 tons.

*P.v.c. Projects.* A number of Indian companies have proposals for setting up plants to manufacture p.v.c. India Cements Ltd. of Madras plan to establish a new industrial undertaking in Tirunelvelli, Madras, for the manufacture of 5,400 tons of p.v.c. resins and compounds. The plant will be built in collaboration with the B.F. Goodrich Chemical Co., U.S. The Delhi Cloth and General Mills will set up with Japanese technical collaboration a plant in Kotah, Rajasthan, for manufacturing 30 tons of caustic soda, 40 tons of calcium carbide and 20 tons of p.v.c. and copolymers per day. The company has plans also to set up a rayon tyre cord plant near Calcutta with the help of an American firm. The Dhrangadhra Chemicals plant in Sahupuram, Madras, will have a capacity of 20 tons/day of p.v.c. resins a year with French collaboration. The project is estimated to cost £3.37 m.

The foundation stone of India's first unit to compound plastic moulding powders was recently laid in Calcutta. The company, East Anglia Plastics (India) Ltd., has been licensed to manufacture cellulose acetate moulding powder and p.v.c. compounds from locally available materials. The firm will integrate with the project its scheme for manufacturing cellulose acetate flakes.



**View of the Sindri fertiliser works, showing Horton spheres, cooling towers and pumphouse**



**Benzol plant of the Bhilai steelworks**

Total cost of the integrated acetate project would be about £7.5 m.

*C.m.c. Plant.* The first carboxy-methyl cellulose plant set up at Bilimora, near Bombay, was inaugurated recently. The £75,000 plant, designed and fabricated in India, is based on a process which is the outcome of collaborative efforts of the Council of Scientific and Industrial Research, New Delhi, the Shri Ram Institute for Industrial Research, Delhi, and the pioneering enterprise of Sardesai Brothers Ltd., Bilimora.

The process developed is specially suited to conditions obtaining in India. It consists, essentially, in suspending the cellulosic raw materials (rayon pulp, linter pulp, hosiery cuttings, etc.) in ethyl alcohol and reacting them with caustic soda and monochloracetic acid. The use of the suspending medium eliminates cumbersome and costly equipment such as shredders, steeping press, kneaders, etc., required in the usual process. All the raw materials except monochloracetic acid (which has to be imported for the time being) are available within the country.

The total Indian requirements of c.m.c., now entirely imported, are estimated at about 3,000 tons/year. The Bilimora plant is equipped to manufacture 1,200 tons/year.

*Caustic Soda Expansion.* The Dhrangadhra Chemical Works Ltd., Dhrangadhra (Bombay State), is embarking on a big expansion programme. The capacity of its caustic soda plant is being increased from 30,000 tons to 50,000 tons a year, at an estimated cost of £1.12 m. The company also has plans to manufacture trichlorethylene and hypochlorite, capacity 15 tons and 30 tons a day respectively. These two projects are estimated to cost nearly £2.2 m.

*Fine Chemicals and Antibiotics.* An Indo-German enterprise, Sarabhai Merck Private Ltd., is being set up at Baroda to manufacture Vitamin C (ascorbic acid) on a commercial scale from indigenous raw materials. The factory will also manufacture sorbitol in collaboration with E. Merck of Darmstadt, West Germany. Under the same project, Sarabhai Merck have an extensive programme to manufacture a wide range of fine chemicals and laboratory reagents according to E. Merck specifications.

The Government-owned Hindustan Antibiotics Factory at Pimpri, near Poona, has completed its programme of expansion for the production of penicillin from 25 m. to 40 m. mega units/year. Manufacture of streptomycin and dihydro-streptomycin will commence by the end of 1961. A pilot plant for tetracyclines with a capacity of 1.5 tons annually is under construction.

A detailed project report for the production of 50 tons of Vitamin C at the Pimpri factory is being prepared in consultation with the National Chemical Laboratory, Poona.

# East-West Chemical Trade War in Hong Kong Warms Up

APART from the products of two small sulphuric plants and a hydrochloric acid installation, all Hong Kong's chemicals are imported. Until the development of light industry a very high proportion of chemical imports were re-exported but since 1954 exports have declined rapidly while imports have remained fairly stable.

An exception to the general rule is coal tar dyes, net imports of which in January-October 1960 were 1,566 tons, worth £1.2 million, chief suppliers being West Germany, the Netherlands and the U.K. The total quantity imported was more than double the net figure, re-exports going mainly to India, South Korea and the Philippines. Imported dyes based on substances other than coal tar came mainly from the U.K. and West Germany, about one-tenth being re-exported.

The textile industry is Hong Kong's biggest industry and the most important consumer of chemicals but other chemical-consuming industries include rubber, enamel, paint, batteries, enamelware, glass and gas mantles, for which the following are the most important chemical imports.

**HONG KONG CHEMICAL IMPORTS**

| Chemical | Value Imported £ | Chief Suppliers |
|---|---|---|
| Titanium oxide ... | 297,000 | Japan, U.K. |
| Lithopone ... ... | 65,000 | Netherlands, U.K. |
| Manganese dioxide ... | 75,000 | Japan, China |
| Borax, boric acid ... | 112,500 | U.S. |
| Thorium nitrate ... | 62,500 | France, U.K., U.S. |

China has lately increased her share in the Hong Kong chemical trade, with an emphasis on basic chemicals—mainly soda ash and caustic soda. She was the leading supplier in 1960 of soda ash, followed by the U.K. and Japan, and equally of caustic soda, making over £81,250 in January-October 1960. Bleaching powder comes mainly from the U.K., but Japan also has a share in the trade. Sulphuric acid, whose industrial uses are many and various, is also largely imported from the U.K., though once again Japan makes a contribution.

Zinc oxide, used both in the rubber industry and the making of flashlight batteries, comes from China, West Germany and France. The U.K. is the Colony's chief supplier of ammonium chloride for dry batteries. The tanning industry uses mostly Chinese sodium sulphide, while South African vegetable tanning extracts, which are shown as imported into the Colony, are mainly re-exported to Taiwan.

Competition in the chemical market in Hong Kong has recently been very keen and is now expected to become even more so. It is reported that Communist China is about to launch a sales campaign in order to acquire as much of the market as possible. It is predicted that this will result in a price-cutting war between the major exporters of Europe and Japan. During 1960 the entrepot trade was slack, and importers concentrated their efforts on selling to local users.

It is said that a number of importers now sell directly to the factories instead of through wholesalers, and as a result the wholesalers in central Hong Kong are about to change their policy in order to sell more to factories in Kowloon. Prices have not yet been affected by this development except that of caustic soda; the British price for large orders has come down in order to compete with imports from Japan and mainland China. The chemical trade as a whole in Hong Kong may well follow this line in the near future in view of the present fierce competition, states the *Far Eastern Economic Review*.

## Chemistry of Fluorine and Its Compounds

THE chemistry of fluorine and fluorine compounds was the subject of a lecture given by Professor R. N. Haszeldine at Ewell County Technical College at a recent meeting of the London Section of Royal Institute of Chemistry.

Particular attention was paid to the various types of fluorocarbon compound which had been synthetised in recent years, many of which had been found to have useful properties. A chemistry of the fluorocarbon compounds had been built up, analogous to that of the hydrocarbons, but showing significant differences because of the pronounced electronegative character of fluorine, and of the tendency of the fluorocarbons to react via carbanions or free radicals rather than via carbonium ions.

Some polymeric fluorocarbons such as p.t.f.e. were by now well known and were finding wide industrial uses; search was now going on for other polymers to meet specific property requirements. Ring and chain polymers of fairly high thermal stability had already been prepared; some containing —C—C—N—O— or —C—N—C—N— chains showed other useful properties, such as low-temperature elasticity, inertness and insolubility.

# EQUIPMENT NEWS

## *Chemical Plant : Laboratory Equipment : Control and Indicating Instruments*

**CONVEYOR FOR BULK POWDER**

A CONVENIENT method of inspecting bulk powdered material for tramp metal is provided by a light duty conveyor which is designed to work in conjunction with the Loma metal detector, both these items of equipment being manufactured by **Automa Engineering Ltd.**, Cherry Tree Rise, Buckhurst Hill, Essex. With the feed hopper situated so that it can be easily fed by hand or machine, the product is conveyed by a troughed food quality rubber belt through the metal detector and on to the next process. When metal is detected a signal is stored until the product reaches the end of the conveyor when an automatic rejection chute operates and diverts the contaminated material into a reject container.

The conveyor is of tubular construction and has a stoved enamel finish. Castors are provided so that the whole unit is portable. Variable speed drives can be fitted if required as an extra.

**GLASS FIBRE MIXING HOPPER**

GLASS fibre chemical mixing hoppers have been specially designed for Commercial Plastics Ltd., Wallsend, by **Moto Plastics Ltd.**, Ponteland, Newcastle upon Tyne. Used for mixing pigment with the plasticiser in the manufacture of coloured p.v.c., the hoppers are coloured to give a tone contrast and so facilitate cleaning. There is also no corrosion and the hoppers are far lighter and less expensive than the iron or stainless steel containers which they have replaced.

The domed glass fibre lids with which each hopper is fitted make it easy to stack the hoppers as the lids flatten out under pressure. Even when the hoppers are loaded there is no danger of the lids fracturing under pressure and the remaining gap at the rim facilitates easy removal of hoppers from the stack. The hoppers are 25 in. in diameter, 18 in. deep, and weigh 32 lb., including the lid.

**COOLING AND FLAKING MACHINE**

A COOLING and flaking machine that has been used for naphthalene, anthracene fat, diphenylamine, carbamite, stearine, various waxes, sodium bisulphate, cetyl alcohol, phthalic anhydride and numerous other products is manufactured by **Richard Simon and Sons Ltd.**, Phoenix Works, Basford, Nottingham.

The machine consists essentially of a roll of the requisite material, which is usually totally-enclosed in a dust-tight casing. The casing is provided with a branch for the connection of the fume duct and adequate inspection windows are provided. The roll, which is mounted on large bearings, is fitted with the company's patented annulus, claimed to give optimum velocity of cooling water and consequently the highest possible rate of heat transfer. If desired the inner liner of the cylinder may be arranged for removal for cleaning, should this be necessary.

The bearings are carried on massive endplates which form part of the cast iron casing, and the bar carrying the knife is of heavy cast iron construction. The steam-jacketed melting tray is constructed of material best suited to the material being flaked.

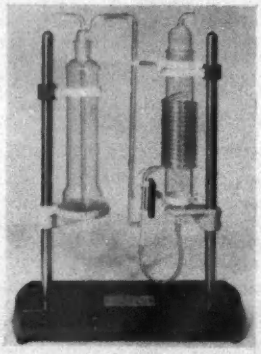
The flaked material can be delivered from the machine by means of chutes of a screw conveyor, to a bagging-off point or one of Simon's automatic sack-filling and weighing machines which will handle either open type or valve bags.

**PIPELINE CONTROL BY TELEMETRY**

PIPELINE remote control equipment is being offered by the Process Control Group of **Rotax Ltd.**, Chase Road, London N.W.10, as a result of an arrangement with the Southwestern Industrial Electronics division of Dresser Electronics, U.S. This solid-state, printed-wiring equipment can give remote control by radio or land-line, of pumps and valves, etc., at a number of unmanned stations. This is assisted by the central display and printer logging of alarms and variables such as pressures and flows, etc., measured by instruments at the stations.

As two finished systems are very seldom alike, the equipment design is adaptable to meet a range of requirements. Individual systems also can be extended easily to provide extra facilities if additions are made to plant and/or instrumentation at a later date. Rapid servicing by non-technical personnel is made possible by a simple circuit substitution method using standard circuit cards.

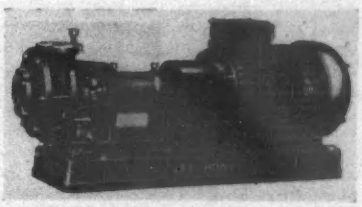
**OXYGEN REMOVAL APPARATUS**



**Available in a new and improved form from Southern Analytical Ltd., Frimley Road, Camberley, Surrey, is this Nilox apparatus, designed for the safe removal of oxygen from gases such as argon, hydrogen and nitrogen. For example, a typical oxygen content in ordinary commercial nitrogen is 2,000 p.p.m.; after purification with the Nilox, the oxygen is 0.2 p.p.m. The apparatus contains no electrical or moving parts and chemical reagents are continuously regenerated. It will deal with flow rates up to 20 litres/hr. It is available, complete with base for bench-mounting, with reagents and full instructions, for £23**

**SILICON IRON PUMP FOR CORROSIVES**

AN unusually wide range of applications, particularly in the chemical industry, is claimed for the new 2 in./2½ in. Hypersilid chemical pump recently produced by **Lee, Howl and Co. Ltd.**, Tipton, Staffs. The pump is made from silicon



**Chemical pump in silicon iron**

iron castings manufactured by Bradley and Foster Ltd., of Darlaston, and is claimed to be suitable for the chemical and petrochemical industries as well, as for installation in trade effluent treatment plants in industry generally. Outputs are: 153 ft. head, 75 gall./min. max.; 80 ft. head, 187 gall./min. with maximum impeller diameter; 86 ft. head, 65 gall./min. max.; 51 ft. head, 150 gall./min. with minimum impeller diameter. The speed is 2,900 r.p.m.

No wear rings are fitted, the impeller running clearance being generous, thereby avoiding rapid loss in pumping efficiency from wear and corrosion. The various parts in contact with the acid are made of silicon iron, while other parts are of fine-grain grey iron castings. The pump shaft is of Staybrite steel and is adequately protected against liquid drippings by a high silicon iron wearing sleeve extending through the whole depth of the stuffing box.

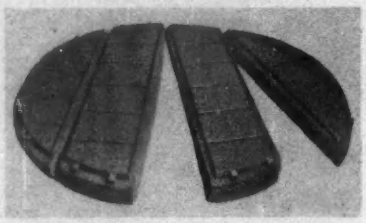
The impeller and shaft assembly can be quickly removed as a unit through the pump casing, without disturbing any of the bearings and other components. Two widely spaced ball and roller bearings are fitted in the substantial cast iron headstock. The casing is of the volute type, made from high silicon iron, of ample wall thickness to allow for design pressure under corrosive conditions, and is provided with a drain plug.

The pump can be fitted with a suitable soft gland packing or, if preferred, with a mechanical seal, both types readily interchangeable. In the case of soft

gland packing, the gland and gland bush are of the split type, easily removable. The stuffing box is made of plastic material and a Stauffer type lubricator provides the necessary lubricant. With a mechanical seal, according to duty and requirements, the detachable stuffing box, gland and lantern ring are replaced by a simple clamping plate.

The volute casing and suction cover are tested up to 100 p.s.i. The drive can be by motor on a common baseplate or by V belt.

## DEMISTER GRIDS



**KnitMesh demisters are now available with extra light-weight support grids made from mild steel, stainless steel and Monel. Photo shows a standard slab KnitMesh unit with the new support grids attached. KnitMesh is an asymmetrically linked interlocking looped structure and can be 'knitted' from almost any material that can be obtained in filament form, makers being KnitMesh Ltd., 36 Victoria Street, London S.W.1**

## MEASURING AND CONTROL SYSTEM

An electric measuring and control system with true two-wire D.C. transmission is announced by **Honeywell Controls Ltd.**, Greenford, Middlesex. Described as fully integrated instrumentation, the equipment embodies modular principles. D.C. transmission of the signal at 4-20 milliamps is used along a pair of wires that also carry the 42 volts D.C. power supply. There are no field power connections and shielding of the transmission wires is not required. Stated to be suitable for any of the usual industrial process control duties, the ElectriK Tel-O-Set system, as it is called, provides many modes of control including "proportional plus reset plus rate action".

The basic system comprises a transmitter, a 5½ in. by 6 in. receiver-controller and a valve operator. The variety of standard alternative units is considerable and includes circular scale as well as strip chart controllers, simple recorders, millivolt-to-current transmitters, process-pressure-to-current transmitters, differential pressure-to-current transmitters, transducers for standard pneumatic-to-electric signals and vice versa; additionally, the control unit with the Tel-O-Set recorder may be arranged for front-of-panel or back-of-panel adjustment. All these units are fully transistorised.

All field units operate on the force-balance principle and operate in ambient temperatures of −40°F to 150°F. The recorder instruments have a six-month ink supply, daily chart tear-off and 30-day rewind. Process and external electrical connection to field-mounted transmitters are isolated from inside the case for convenience in maintenance.

## CLIPS FOR INDUSTRIAL THERMOMETERS

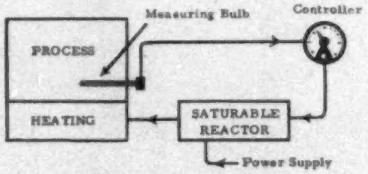
Time-saving modification for users of their bi-metal horizontal and vertical pattern industrial thermometers has been introduced by **The British Rototherm Co. Ltd.**, Merton Abbey, London S.W.19. A strong, adjustable steel spring clip secured to the base of the instrument firmly grips the body nut, eliminating entirely the gland and gland nut and the need for the use of a spanner. The clip is available for instruments in all standard temperature ranges in 2½ in. and 4 in. dial sizes.

The modification is available for use with or without separable pockets. It greatly facilitates the fitting or removal of the thermometer. For heating and similar liquid installations where the pocket is fitted permanently, the clip enables the instrument to be quickly attached or removed without draining the system.

## TEMPERATURE CONTROL SYSTEM

No moving parts are used in a temperature control system employing the Fielden Bikini temperature controller and a saturable core reactor, claimed to give temperature control of circuits of up to at least 10kW with no maintenance and an almost indefinite life.

The Bikini controller and saturable core reactor operate from a stainless steel measuring bulb of only ¼ in. dia. and two types are available, one for use at temperatures up to 500°C and the other for up to 850°C. The controllers




**Temperature control circuit**

are available in 73 ranges covering temperature spans as short as 50°C and as wide as 600°C. The control differential is only 0.5°C and if desired the controller can be located as much as 300 ft. away from the measuring point.

Further details are available from **Fielden Electronics Ltd.**, Wythenshawe, Manchester 22.

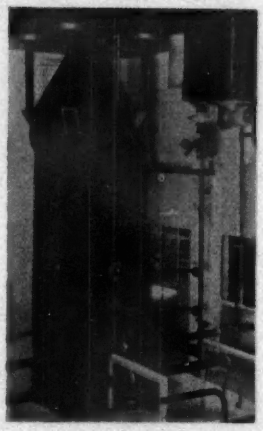
## AIR-POWERED SUBMERSIBLE PUMPS

Conceived originally for use under 'flameproof' conditions, a new range of submersible pumps is stated to have applications in other situations where it is desired to pump, mix or circulate moderately large quantities of liquid.

The pumps are air powered and the makers claim that this gives them advantages over their electric counterparts, including that of cost. The pumps are compact, light and portable, yet give outputs of up to 1,000 gall./hr., heads well in excess of 25 ft. being readily obtained.

Two models are available, the standard version and the drum and barrel emptying pump. All immersed parts of both types are of stainless steel. Makers are **D. A. Gunn (Engineering) Ltd.**, Clydesdale Works, Park Road North, London W.3.

## PLASTICS FUME SCRUBBER



**In our issue of 29 October 1960 (p. 728) we illustrated a Tufplas plastics fume scrubbing tower on its way to Germany from the Addlestone, Surrey, works of Tough Plastics Ltd. Here it is again—installed in the Munich works of Elektrochemische Werke Munchen AG, where it is now satisfactorily operating. The unplasticised p.v.c. used by Tough Plastics in this fabrication was supplied by Bakelite Ltd., the polyester resin by Beck, Koller and Co. Ltd., and the glass reinforcements by Fibreglass Ltd.**

## DEWPOINT MEASURING UNIT

For permanent installation to measure moisture in dry gas or air lines is a new unit introduced by **Shaw Moisture Meters**, Rawson Road, Westgate, Bradford, Yorks. A small flow of the gas or dry air of which the moisture content is required to be indicated or controlled, is taken through the measuring unit, which contains a replaceable ceramic filter and also the sensing probe which is connected to an indicating or recording instrument. The actual sensing element is despatched in a sealed packing in which it is stored until after the measuring unit is installed and purged with dry gas for an hour or two to dry it.

Low cost and simplicity are claimed for this unit, while it is stated that no attention is needed. "The range of the instrument is such that no gas has yet been encountered in practice which is too dry for the moisture to be indicated."

The range is down to 150°C dewpoint and the unit is suitable for almost all gases. Price: £10.

Overseas News

# AVERAGE MONTHLY PRODUCTION OF FRENCH CHEMICALS UP BY 30%

AVERAGE monthly chemical production in France was last year up by 30% on that for 1959. This includes increases of 7% for so-called para-chemicals, 10% for petrochemicals and 58% for organic chemicals. The 30% overall increase compares with a general French industrial output increase of barely 10% over the year. However, the French chemical price index rose by only 1.3% over the year, as compared with an increase of 3.3% in the prices of industrial products in general.

French chemical exports rose by 29% over the previous year's total to N.F.152 million in 1960; including exports to other countries of the franc zone, exports went up by 26% over the year of chemical products. Particular rises in chemical exports were of 38% to Federal Germany, 37% to Italy, 37% to the Belgo-Luxembourg Economic Union and 36% to Holland. France's chemical imports rose over the year by 33% to N.F.52 million value. This meant that the export surplus of the country's chemical industry fell from some N.F.130 million in 1959 to about N.F.100 million last year.

## Ube Soda to Increase Fertiliser Capacity

The Japanese company, Ube Soda Industries Co., are to double their capacity of high compound fertiliser from the present 5,000 tonnes-a-month capacity of K-ammonium phosphate chloride (14-14-14 quality) to 10,000 tonnes a month.

The phosphoric acid capacity is also to be increased from 23 tonnes a day to 75 tonnes a day by the addition of another plant.

The first stage of construction of a sodium tripolyphosphate plant has already begun. The 600-tonne-a-month capacity plant is expected to be completed by September of this year. Following this, the second stage of construction will begin and an additional 600 tonne capacity plant will be complete by March 1962.

## New Oil-from-coal Plans in South Africa

Now that Sasol—South Africa's oil-from-coal industry—is at last showing a profit (the latest balance sheet revealed a turnover of £8.2 million and a profit of £677,494), plans are now being considered for a second plant, twice the size of the present one. In a paper read to the Commonwealth Mining and Metallurgical Congress recently the managing director, Mr. P. E. Rousseau, said experience had shown that an installation of this size could be economically possible.

Total production of purified gas at Sasol, with eight gasifiers in operation, is 4.75 million cu. ft./hr., requiring 3,400 tons/day of coal, 440,000 lb./hr. of steam and 1 million cu. ft./hr. of oxygen. Two gas streams emerge from the plant, one being fed directly to the German Arge synthesis plant and the other, intended for the American Kellogg synthesis process, to the gas reforming plant. Products of Sasol include, in addition to petrol, fuel oils, waxes, etc. —crude phenols, ammonium sulphate, alcohols, acetone and methyl ethyl ketone, and liquefied oxygen. Liquid products are stored in tanks with a total capacity of 10.37 million gall.

## Plans for Sicilian Sulphur Industry Discussed

The plans to reduce the cost of sulphur production in Sicily and to build chemical plants that would fully make use of the local sulphur, suggested at the recent sulphur conference in Palermo, would involve an expenditure of 47,500 million lire.

It is thought in some quarters that it would be better to allow the Sicilian sulphur industry to die a natural death. In answer to the argument that to close down the industry would aggrevate considerably the unemployment problem, it is pointed out that the men could be absorbed, at a much lower cost, into other industries, such as the manufacture of potassium salts, which are plausible in Sicily. Another factor in favour of this scheme is the fact the Sicilian reserves of sulphur are not expected to last much longer.

## U.S.-Japan Tie-up for Bentone Production

A tie-up has been announced between the Japanese company, Takasago Perfumery Co., and the National Lead Co. of the U.S. for the manufacture of Bentone, a material which imparts viscosity to paints and printing inks, and for the manufacture of heat resisting lubricants.

Bentone is manufactured from Bentonite base blended with organic amine. Takasago will receive patent rights and technical know-how from National Lead under a five-year contract. The planned capacity of Bentone is 60 tonnes in 1961 increasing by stages to 156 tonnes in 1965.

## U.S.-Argentine Firm to Build Petrol and Petrochemical Plant

A newly formed company, Hydrocarbon-Argentina, jointly owned by Hydrocarbon Research Inc. and Minera Alumine, are to build a $15 million plant for the production of high octane petrol, benzene and petrochemical products. The capacity of the plant is to be 8,000 to 11,000 barrels a day of high-octane petrol, and about 700 barrels per day of benzene.

The plant will be built at San Lorenzo and is expected to be completed towards the end of 1963. Yacimientos Petroliferos Fiscales, the Argentine Government owned petroleum and refining company, will supply naphtha feedstock to the plant and will take all its output except benzene, ethylbenzene, *o*- and *p*-xylene and naphthalene, which will be marketed by Hydrocarbon-Argentina.

The plant's hydrodealkylation unit will operate on a non-catalytic thermal process developed jointly by Atlantic Refining and Hydrocarbon Research.

## Japanese Joint Co. to Produce Acetylene

A new joint company, owned by the Japanese concerns, Showa Denko and Kokan Chemical, has been formed for the manufacture of acetylene and methanol. The acetylene, which is to be used for the production of neoprene, will be made by cracking methane produced from coke oven gas. The waste gas will be used for the manufacture of methanol. The capacity of the plant is planned at 20 tonnes/day of acetylene and 50 tonnes/day of methanol.

## Dow Polystyrene Plant in Leghorn

The Dow Chemical Co., of the U.S., have announced plans to erect a plant at Leghorn, Italy, for the production of polystyrene resins. The plant will be built by Foster Wheeler Italiana, of Milan, and operated by Dow Chimica Italiana S.p.A. With an annual capacity of 16,000 tonnes, the unit is expected to be ready for production start by mid-1962.

## Bayer Chlorine Expansion

Following the report in CHEMICAL AGE for 15 April 1961, that the Leverkusen, West Germany, firm Farbenfabriken Bayer AG were to raise their chlorine capacity, it is now stated that a new chlorine alkali electrolysis has been opened at the Bayer plant at Uerdingen. The plant will have an initial annual capacity of 30,000 tonnes of chlorine, a second expansion stage—work on which is already under way—to raise capacity to 45,000 annual tonnes and a planned third stage to effect a further increase of 15,000 tonnes a year. At present Bayer has an annual chlorine capacity of 170,000 tonnes.

## New Canadian Entrant to Polyester Resin Field

Multi-Chem Products Ltd., Victoria, B.C., joint subsidiary of British America Paint Co. Ltd., Victoria, B.C., and Chemical Oil and Resin Co., Toronto, will be the first Canadian company west of Ontario to manufacture polyester resins and other materials for the reinforced plastics industry.

## Mitsui to Introduce MIBC and MIBK

The Japanese company, Mitsui Petrochemical Co. are to manufacture MIBC and MIBK. They have signed a contract

with Seration Co., Panama, a subsidiary of Celanese Co., U.S.

MIBC and MIBK are being imported at the rate of 6,000 tonnes a year as solvents for paints. The company, as well as satisfying this market, hope to attract the domestic market.

A 500 tonnes a month plant is to be constructed and is expected on stream by March 1962. The contract with Seration covers process engineering and design of equipment and operation data. Initial payment is $130,000 for a 20 million lb. per year capacity with an additional payment for any additional capacity. Royalty is on a per kg. basis ranging from 0.70 cent to 1.04 cents according to sales volume, with a minimum royalty of $47,000 per year.

## Chemical Industry Promotion in Sardinia

A company with the name of S.p.A. Chimica Mineraria Sarda (CHI. MI. SAR.) has been formed in Cagliari on the Italian island of Sardinia for the promotion, development and operation of industrialisation in Sardinia. The company is understood to be directed mainly at the building-up of a Sardinian chemical industry.

## Caltex-Hoechst Petrochemical Plant

Caltex Oil (Germany) GmbH, a West German subsidiary of the U.S.-based Caltex group, has announced that it has definitely decided to build an oil refinery with a throughput of 2 million tonnes in the Frankfurt-on-Main region of West Germany. In connection with this scheme, Caltex Oil (Germany) has signed a petrochemical base delivery contract with the Farbwerke Hoechst AG chemical concern of Frankfurt-on-Main, under which a pipeline will supply Hoechst with the necessary materials. Construction of the Caltex refinery will start this autumn and is expected to be completed by the end of 1963. Cost is put at $50 million. The Caltex-Hoechst scheme covers mineral oil distillation, hydrotreating and cracker production of olefins.

## 'Basic Industries' in Peru

The Peruvian Government announces from Lima that it has declared as 'basic industries' the production of petrochemicals, carbo-chemicals, organic binding agents and a wide range of base chemicals and chemical products. This means that these industries will be granted special advantages in the setting up of new companies and projects in Peru.

## Another Japanese Firm Joins Tokuyama Combine

The Japanese firm, Toyo Soda Mfg. Co. plan to join the chemical combine in the Tokuyama district which is headed by Idemitsu Kosan. The company is to construct a new plant, at a cost of 1,810 million yen, for the manufacture of the following chemicals: ethylene dichloride, 50,000 tonnes; ethylene dibromide, 4,700 tonnes (1,700 tonnes at present); ethyl chloride, 6,140 tonnes; propylene oxide, 7,500 tonnes.

Raw materials will be supplied by Idemitsu Kosan's new refinery when it is completed. Until then ethylene and propylene will be bought elsewhere. In order to meet the planned capacities of new chemicals, Toyo Soda will double the capacity of their bromine plant to 3,000 tonnes a year and the electrolytic soda plant to 6,000 tonnes a year.

## Indian Company Plans Sodium Sulphate Facilities

Hindustan Salt Co. Ltd. have prepared a plan for the production, in co-operation with West German experts, of sodium sulphate. The project will cost an estimated Rs.6,200,000. The Government of the Indian State of Rajasthan is reported to have given its support to a proposal that sodium carbonate and caustic soda should be produced in the Didwana salt mines.

## S.D. Awarded Contract for Maleic Plant

Scientific Design Co. has been awarded an engineering contract by Bombrini Parodi-Delfino S.p.A. for a maleic anhydride plant to be built at Collefero, Italy. The plant, with a capacity of 10 million lb. a year, will use S.D.'s process based on the air oxidation of benzene. The plant is scheduled for completion in mid-1962.

## Russia Develops New Acid-Resistant Plastic

The Institute of Chemical Physics, Academy of Sciences, U.S.S.R., has developed a new plastic, called "poliefirakrilat", which is acid- and alkali-resistant. A group of Soviet scientists studied the problem of obtaining this plastic and of using it industrially. Their work has been nominated for the Lenin prize.

## St. Gobain Processes for Germany and Japan

The Japanese company, Toyo Koatsu, has acquired from St. Gobain of France their patented process for the manufacture of sodium tripolyphosphate. A plant based on the process with a capacity of 10,000 tons a year has recently come into operation.

Also operating on a St. Gobain process is a phosphoric acid plant of Norddeutsche Chemie which has just started up in Germany near Embsen.

## High-temperature Vinyl Sheeting Developed

Seiberling Rubber have developed a polyvinyl dichloride sheet that can be used up to 215°F (60° higher than conventional vinyls). The new material is made of the Goodrich high-temperature Geon vinyl. It resists chemical attack and has good mechanical strength, according to Seiberling. The sheets cost roughly 50 cents a lb. more than the conventional p.v.c.

## Jefferson Producing Polypropylene Glycols

Jefferson Chemicals have started the production of polypropylene glycols for the urethane industry. The materials are being produced at Jefferson's new polypropylene plant at Conroe, Tex., and will supplement their range of polypropylene glycols made at the Austin, Tex., plant.

## Soviet Drug for Japan

A contract under which the Soviet Union is to sell to Japan 40,000 ampules of Galantamin—a preparation for treating the after-effects of poliomyelitis—was signed in Moscow recently by representatives of the U.S.S.R. Medexport organisation and the Japanese Iskra Industry Company.

## Nalco Chemical to Make TEL and TML ?

The U.S. company, Nalco Chemical is considering plans for a tetraethyl and tetramethyl lead plant designed to convert about 26 million lb. of lead a year. If the plans are put into effect, the facility would use an electrolytic process on which Nalco has been working, instead of the conventional sodium lead amalgum method.

# Salt Build-up Problems Reduced in Egg-shaped U.S. Crystalliser

A CRYSTALLISER that is claimed to have advantages over existing designs—including maximum control of cystallisation and minimum build-up of salts in the vapour section—has been introduced by Chicago Bridge and Iron Co. in the U.S. In shape, the vessel resembles an egg with the hemispherical part uppermost, the bottom part being an inverted cone rounded at the apex. Thus, when the vessel is half full of liquid, the liquid level coincides with the widest diameter, giving maximum vapour-liquid surface. Boiling is steadier, meaning less entrainment of liquor and therefore reduced salt formation in the vapour section, while water removal and flow temperature can be controlled more easily.

The structure of the vessel is simplified by the use of the 'conispherical' shape, meaning lower capital costs, since the smooth, rounded contours of the vessel give high resistance to both internal and external pressure with the minimum of reinforcement. In large units, maximum advantage could be taken of this factor since, as crystalliser diameter increases, the junction of sphere and cone can be made lower and the shape more closely approximates a true sphere.

## Prevention of Aerosol Container Corrosion

ONE of the problems of using aerosols has been the corrosion of the container caused by the reaction between the propellent and anhydrous ethyl alcohol. Du Pont, who have experienced this problem with their Propellent 11, have developed a means of preventing this through a newly introduced propellent formation containing a special stabiliser.

The new compound is called Freon 11 S propellent and is regular Freon 11 (trichloromonofluoromethane) to which has been added 0.3% nitromethane. Except for the addition of the nitromethane inhibitor, the new propellent has the same composition as Freon 11 and will be sold at the same price, and is available in the standard commercial quantities. It is believed to be compatible with most aerosol products now on the market.

Research by the Du Pont Freon products laboratory into the cause of corrosion in non-aqueous products containing ethyl alcohol and propellent 11 has established that the major cause of the corrosion is the reaction between the propellent and ethyl alcohol, and not hydrolysis by a small amount of water in the mixture as was previously thought.

The use of nitromethane as a stabiliser is the subject of a patent application by Du Pont.

Freon 11 S is distributed in the U.K. by Brown and Forth Ltd., Clifton House, 83-117 Euston Road, London N.W.1.

## Obituary

**Mr. Walter Hugo Breuer,** chairman and joint managing director of Reichhold Chemicals Ltd., was killed in a motor accident on the Continent on 26 April. He was 60. He was appointed chairman and managing director of

**W. H. Breuer**

Reichhold Chemicals when the company was formed in 1952, having previously been closely associated with the Beck, Koller Co. for many years. In addition to his responsibilities in the U.K. Mr. Breuer was executive vice-president for European affairs of Reichhold Chemicals Inc., U.S., and during the last few years had increasing managerial responsibilities on the Continent.

## Staff Status for Chargehands

Most I.C.I. chargehands will be transferred to staff status, probably by July. It is felt that they should be recognised as assistant foremen.

# Wacker Acetaldehyde—Hoechst Reveal Process Details

SOME of the process details of the Wacker process by which acetaldehyde is produced by the oxidation of acetylene have been disclosed by Farbwerke Hoechst. The process was developed by Aldehyd GmbH (jointly owned by Wacker Chemie and Hoechst) and Hoechst have been operating two plants in Germany based on the Wacker process for over a year. They say that high yields are obtained with a quality that compares with that of acetaldehyde produced by the conventional acetylene hydration process (*Chem. and Engng. News,* 17 April).

The process can use raw materials from a variety of sources. There are two variants of the process—a single stage oxidation using oxygen and a two-stage oxidation with air—but in both, ethylene is oxidised in an aqueous solution of cupric chloride and palladium chloride. The process is a continuous one; the cupric chloride is reduced during the oxidation and the cuprous salt is re-oxidised by the oxygen or air back to the higher oxidation state.

In the single stage process, ethylene is fed into a vertical reactor filled with catalyst solution. The reaction takes place at the boiling point of water. The gaseous reaction mixture—reaction products, steam and unreacted ethylene—goes to a separate washing tower where the acetaldehyde is washed out with water. The aldehyde free gas is recycled back to the reactor.

The air oxidation process requires higher temperatures and pressures than the single stage process. The ethylene flows through the catalyst solution in a single-pass reactor. The reaction products and the catalysts are separated by distillation in a separate unit, using the heat of reaction to supply the heat. The catalyst solution flows to a regenerator where the cuprous chloride is re-oxidised to cupric chloride by air and is recycled to the first reactor.

The two-stage process has an advantage in that it can handle either a pure ethylene feed or a gas rich in ethylene since the gas stream is not recycled.

The economics of the Wacker process have come up to expectations. There are two factors in this: petroleum ethylene is cheaper than acetylene, and oil supplies from which the ethylene is obtained are assured. In both variants of the process a 95% yield is obtained almost without by-products, and they operate at working temperatures and pressures.

# *Cyanamid Open $1.7 Million Basic Research Centre in Geneva*

BASIC research will be the only work done in the new laboratory Cyanamid European Research Institute formally opened in Geneva on 27 April. Dr. Richard O. Roblin, president of the institute, established by American Cyanamid, said that it would provide its scientists with the time, equipment and freedom they needed to explore new frontiers of science.

The staff of the institute consists of "outstanding European researchers" drawn from seven countries. Cyanamid's total research effort involved the activities of over 1,000 graduate scientists and an expenditure of nearly $30 million during 1960.

Although basic research programmes are carried out at all major Cyanamid laboratories, the institute represents the first facility dedicated exclusively to fundamental work in the chemical and physical sciences. Facilities and equipment at Geneva represent a capital investment of about $1,700,000.

Areas of research to be explored will include theoretical organic chemistry, and solid state physics. Scientific programmes in each of these research areas are entrusted to independent group directors, each of whom was chosen on the basis of his achievements in his field and each of whom is given complete freedom to formulate and direct his own research programme, as well as to select his own staff.

Among the first group directors to be appointed are Dr. Robert F. Hudson (theoretical organic chemistry) and Dr. Edwin A. C. Lucken (instrumentation group and physical chemistry) of the U.K., Dr. A. C. Klixbüll-Jorgensen (theoretical inorganic chemistry) of Denmark, Dr. Emanuel Mooser (solid state physics) of Switzerland and Dr. Erwin Weiss (synthetic inorganic chemistry) of Germany.

The institute is at Cologny overlooking Lake Geneva and has about 25,000 sq. ft. of laboratory and office space.

## European Producers and Sulphur Institute

THE idea that led to the formation of the Sulphur Institute—referred to in our leading article, 8 April—originated both in Europe and the U.S. and was, we learn, not solely an American idea. Some of the founder-members were in fact European. The Institute, which was set up by both sulphur and pyrites producers, is international in scope and now has members, member-firms in many countries outside of North America, including Belgium, Finland, France, Germany, Italy, Norway, Spain, Sweden and the United Kingdom.

# PEOPLE in the news

● **Mr. J. G. Hill** has been appointed works manager of the new Baglan Bay factory of British Hydrocarbon Chemicals Ltd. with effect from 1 July 1961. The Baglan Bay project, described in CHEMICAL AGE, 22 April, p. 651, is expected to be brought into operation about the last quarter of 1962. Mr. Hill has been plant manager of Forth Chemicals Ltd. at Grangemouth since October 1951; he was previously maintenance manager at the Ruabon factory of Monsanto Chemicals Ltd. for some five years

● **Mr. P. S. Linklater,** head of the International Licensing Division of Shell International Chemical Co. since April 1959, has assumed the new appointment of general manager of the Shell Chemical Co's newly formed Administration and Services Division. A barrister who read Natural Sciences at Cambridge, Mr. Linklater joined the Royal Dutch Shell Group in 1954 as a member of licensing and agreements department of the former Chemical Industry Administration of Shell Petroleum. He later became manager of that department. His previous work has involved travel throughout Europe and North America and the acquisition and sale of oil and chemical process information and patent rights on behalf of the group. In his new post, he will be responsible for the general administration of Shell Chemical's commercial services, legal, personnel, publicity and general services departments.

P. S. Linklater

G. McClune

● **Mr. G. McClune, B.Sc., M.I.Chem.E.,** has accepted an invitation to join the board of Nordac Ltd., Uxbridge, Middlesex, a member of the Woodall-Duckham Group of companies. Mr. McClune, who will be responsible for all sales activities of Nordac, was previously employed by them from 1948 to 1956. He has since been on the staff of Messrs Matthew Hall Ltd.

● As a result of elections held under the new constitution of the Association of British Pharmaceutical Manufacturers the following officers have been appointed: **Mr. H. W. Palmer** (Glaxo), president (re-elected); **Dr. D. H. Wheeler** (Wellcome Foundation), vice-president (re-elected); **Mr. E. D. Carey** (I.C.I.), immediate past president; and **Mr. G. T. Morson** (Thomas Morson), hon. treasurer (re-elected).

● **Mr. S. W. Martin** has relinquished his position as managing director of the Staveley Iron and Chemical Co. Ltd., near Chesterfield, but continues as chairman. He will be succeeded as managing director by **Mr. N. C. Macdiarmid,** a director of Stewarts and Lloyds Ltd., who joined the Staveley board in September, 1960. As already announced, **Mr. W. N. Menzies-Wilson** has been appointed deputy managing director.

● **Mr. W. E. K. Piercy,** development director of Albright and Wilson, Ltd., has been appointed to the Board of W. J. Bush and Co. Ltd. The appointment of Mr. Eric Bush to the board of Albright and Wilson was reported in CHEMICAL AGE, 8 April, p. 587.

● Newly elected president of the Combustion Engineering Association is **Mr. N. A. McNeill** (Unilever Ltd.). Vice-presidents include **Mr. S. P. Chambers** (I.C.I. chairman), and **Mr. B. E. A. Vigers** (director, Laporte Industries Ltd.). Chairman is **Mr. F. Wilkinson** (West's Gas Improvement Co. Ltd.).

● **Mr. P. S. Rendall,** a deputy chairman and managing director of Courtaulds Ltd., is to retire on 30 September.

● At the recent annual meeting of the British Rubber and Resin Adhesive Manufacturers' Association, **Mr. N. G. Bassett Smith** (Dunlop Rubber Co. Ltd.) and **Dr. H. Simon** (Evode Ltd.) were re-elected chairman and vice-chairman respectively.

● **Mr. T. R. Reynolds,** who joined Vinyl Products Ltd., Butter Hill, Carshaltons, Surrey, six years ago, has, following service in the research and technical sales departments, been appointed to the outside sales staff. He will be joining **Mr. W. H. Gathercole** in the south London and south of England area, thereby giving increased service to customers in the area.

● **Mr. E. Glanvill Benn,** chairman of Benn Brothers Ltd., publishers of CHEMICAL AGE, and other trade and technical journals, has been elected vice-chairman of the Exchange Telegraph Co.

● **Mr. C. H. Glassey,** chairman of British Industrial Plastics Ltd., has joined the board of Turner and Newall Ltd. **Mr. R. M. Bateman,** deputy chairman of Turner and Newall, has joined the B.I.P. board. These changes follow the successful offer by Turner and Newall for the ordinary shares of B.I.P.

● **Dr. Jacques E. Wegmann,** a chemist in the dye laboratories of CIBA Ltd., Basle, was presented on 12 April, with the Worshipful Company of Dyers' Research Medal for 1959-60 for his original research work on the effect of structure on the change in colour of vat dyes on soaping.

● **Mr. T. H. Hopper** (Middleton and Co. Ltd., Middlesbrough) was re-elected chairman at the recent annual meeting of the British Laboratory Ware Association. Other officers were elected as follows: *Vice-chairman:* C. H. Williams (Jencons (Scientific) Ltd., Hemel Hempstead, Herts.); *treasurer*: J. G. Malpass (W. Finlayson, Stockton-on-Tees); *immediate past chairman:* T. A. Dryden (T. Dryden, Ltd., Landore, Swansea); *members of council:* J. Clegg (James Woolley, Sons and Co. Ltd., Manchester); K. A. Tozer (Charles Hearson and Co. Ltd., London S.E.1); R. Evans (Kernick and Son Ltd., Cardiff); G. A. Bennie (McCulloch Bros. and Wilson, Glasgow); J. Boucher (Ferris and Co. Ltd., Bristol); Dr. H. Ellis (Pyrometric Equipment Co. Ltd., Market Harborough).

● **Sir Alexander Todd, F.R.S.,** Professor of Organic Chemistry, Cambridge University, and chairman of the Advisory Council on Scientific Policy, will receive an hon. D.Sc. at Sheffield University on 1 July, as will **Professor N. F. Mott, F.R.S.,** Cavendish Professor of Experimental Physics, Cavendish Laboratory, Cambridge.

● **Mr. G. F. Sommerville,** manager of the Baronet works, Warrington, of Laporte Chemicals Ltd., has been appointed a director of Laporte Chemicals from 1 April. A graduate of Glasgow University, he joined the company in January 1957 in connection with the commissioning of the organic chemical process for the manufacture of hydrogen peroxide. He had previously spent seven years in the oil industry in Trinidad. After experience at the pilot plant at Luton, Mr. Sommerville became manager of the new plant at Warrington and in November 1959 was appointed works manager there in succession to Mr. C. B. Bolland, on the latter's transfer to Laporte Acids Ltd.

S. W. McCune

G. F. Sommerville

● **Mr. Samuel W. McCune III,** general sales manager of the Du Pont Co. (United Kingdom) Ltd., 76 Jermyn Street, London S.W.1, has been promoted to deputy managing director. A graduate in engineering of Princeton University, Mr. McCune joined E.I. du Pont de Nemours and Co. in 1940. and in 1957 he was transferred to the Du Pont Co. (United Kingdom) as general sales manager.

## Commercial News

- **Albright See Tougher Conditions Ahead**
- **J. R. Chambers Becomes Limited Company**
- **B.D.H. Expectations for Poole Project**
- **Monsanto Australia Profits Down 26%**

### Albright and Wilson

Profit margins are under pressure and profits of the Albright and Wilson Group might not be so good as in 1960, said Mr. S. Barratt, chairman at the annual meeting. Under these circumstances, it was unfortunate that the tax proposals put forward in the Budget would aggravate their troubles.

Mr. Barratt added that so far 98% of shareholders of W. J. Bush and Co. Ltd. have accepted the offer made by Albright and Wilson.

### B.D.H.

A fixed interest issue, probably involving £2 million or more, is indicated by Mr. G. Eley, chairman, in his annual statement to British Drug Houses' shareholders. No issue of ordinary capital is proposed, but the B.D.H. board plan to fund borrowings and provide for a reasonable part of future capital spending.

This year has opened with a considerable increase in turnover, but the Australian subsidiary which produced last year's setback, may affect the current year's earnings. View of the B.D.H. board seems to be that expansion will be resumed in 1962, when the Poole development plan should be completed. (See also 'Project News', page 727.)

### J. R. Chambers

The business in chemicals and metals carried on by Mr. J. R. Chambers under his own name since May 1948 has been converted into a private limited company under the name of J. R. Chambers Ltd. The address remains at Finsbury Circus House, 4/10 Blomfield Street, London E.C.2. Mr. J. R. Chambers will continue as managing director and will be joined as a director by his son, Mr. B. R. Chambers who has been with his firm since 1949. There will be no change in the conduct of the business which will operate all the existing agencies—those for K. D. Feddersen and Co., Hamburg (industrial chemicals, fertilisers); Johann Haltermann, Hamburg (mineral oil and coal tar derivatives, naphthalene, cresols, xylenes, toluene, naphthas); Gamichon Carette et Cie., Paris (red lead, litharge and calcium plumbate); Distillerie Italiane, Milan (alcohols, butanol, butyl acetate, dioctylphthalate, dibutylphthalate.

### United Glass

Group net profits of United Glass Ltd. for the year ended 7 January were £1,015,268 (£766,114), and group trading profit of £2,020,834 (£1,460,412).

### Woodall-Duckham

Value of work carried out by the Woodall-Duckham Group in 1960 was £13.25 million (£12 million); orders received slightly exceeded the value of work carried out. Including uncompleted orders of a new subsidiary, unexecuted work in hand at the beginning of 1961 rose to £21.5 million. Pre-tax group profits for 1960 were £1,441,766 (£968,594) and the net balance attributable to Woodall-Duckham was £696,255 (£583,138). The 1960 results were favourably influenced by the bringing in of profits from a number of completed large-scale contracts. A final dividend of 22½% is declared on ordinary, making 27½% (25%). A one-for-three scrip issue is proposed.

### Tharsis Sulphur

Net profit of Tharsis Sulphur and Copper Co. Ltd. for 1960 was £196,705 (£155,887). Dividend is being maintained at 12½%. Annual meeting will be held in Glasgow on 19 May

### Eaton Chemical

The Canadian operations of Eaton Chemical and Dyestuff Co., London, have been purchased by Lawrason Holdings, Ltd. Eaton, who produce and distribute basic and converted chemical compounds from their Toronto and Windsor plants, will continue to operate under their own name.

S. F. Lawrason and Co., Ltd., subsidiary of Lawrason Holdings, will manufacture and sell in Canada Kelite metal preparations and treatment compounds which were previously imported from the U.S.

### Canadian Chemical

Mr. Robinson Ord, president of Canadian Chemical Co. Ltd., said at the recent annual meeting that the company's sales last year increased by 5% over 1959, but that this was not sufficient to offset higher costs. First quarter 1961 sales this year have been below expectations, but March sales greatly improved on January and February.

New petrochemical facilities are operating successfully, and rates in excess of design have been consistently attained. There has been a continuing rise in sales of the new synthetic fabric Arnel.

### Northland Fertiliser

Northland Fertiliser Co. Ltd. have been registered as a public company in Auckland, N.Z., with a nominal capital of £600,000. Owned jointly by Kempthorne, Prosser and Co.'s N.Z. Drug Co., the N.Z. Farmer's Fertiliser Co., and the Challenge Phosphate Co., the new company will set up fertiliser works in Northland.

### Staley AG

Staley AG is the name of a company registered in Switzerland with a capital of S.Fr.350,000 to participate in industrial and commercial enterprises; to manufacture, export and import chemical products and products derived from synthetic and emulsion resins, polymers and related products, etc. U.K. address is Progress House, 10 Snow Hill, London E.C.1. Director is Peter Ackermann of Lucerne.

### Monsanto Australia

Group profit of Monsanto Chemicals Australia in 1960 totalled £A381,819, 26.4% down on 1959 in spite of a 4% rise in sales. Tax took £A342,425 (£A285,409) and depreciation £A316,939 (£A285,402). Dividend on ordinary is 4½% (7½%). Turnover in 1961 has fallen "very substantially" and no immediate recovery is foreseen.

### Zwanenberg Organon

Net profits of Zwanenberg-Organon, Oss, for 1960 were Fl.15.1 million (Fl.12.9 million), despite substantially higher costs. Both the food and chemical divisions shared in the favourable results. Dividend is 17% (same, but on smaller capital), plus a 5% stock dividend. Capital is to be increased by a Fl.3.3 million rights issue, which will cover capital needs for 1961 and 1962.

### INCREASES OF CAPITAL

SOCIÉTÉ DES INSECTICIDES GEIGY, a French subsidiary of J. R. Geigy AG, Basle, Switzerland, concerned with the manufacture of insecticides, has increased its capital from NF.3.5 million to NF.5.25 million by partial releasing of reserves and the raising of nominal share value from NF.350 to NF.525.

DESOWAG-CHEMIE GMBH, chemical producer of Soligen, West Germany, has raised its basic capital from DM1.75 million to DM3.5 million. The extra DM1.75 million was taken over by the Deutsche Solvay-Werke GmbH, West Germany.

### NEW COMPANIES

ARMITAGE'S FERTILISERS LTD. Cap. £3,000. To acquire the business of organic fertiliser manufacturers carried on by J. and L. Armitage at Leeds. Directors: L. E. Armitage and J. L. Armitage. Reg. office: Vinces Chambers, Victoria Square, Leeds 1.

FEATHERSTONE DRUG COMPANY LTD. Cap. £1,000. Dealers in and manufacturers, merchants, importers, exporters of and agents for the sale of drugs, etc. Director: S. Freeman. Reg. office: 10 Butts Courts, Leeds 1.

R. W. JENNINGS AND CO. LTD. Cap. £10,000. Manufacturers and suppliers of and dealers in equipment, apparatus and plant for laboratories and chemical and pharmaceutical products, etc. Directors: R. W. Jennings and H. L. Jennings. Reg. office: 12/14 Stoney Street, Nottingham.

*WANTED: continued*

BALL AND ROLLER BEARINGS ETC. WANTED. ALSO SURPLUS GOODS—ESPECIALLY HAND TOOLS—OF ALL DESCRIPTIONS. R. PORDES, 138 NEW CAVENDISH STREET, LONDON, W.1. MUSeum 5250.

*WORK WANTED & OFFERED*

CRUSHING, GRINDING, MIXING and DRYING for the trade
THE CRACK PULVERISING MILLS LTD.
Plantation House,
Mincing Lane,
London, E.C.2.

PULVERISING of every description of chemical and other materials. Collections, storage, deliveries. THOMAS HILL-JONES, LIMITED, INVICTA WORKS, BOW COMMON LANE, LONDON, E.3. (TELEPHONE: EAST 3285.)

# TRADE NOTES

### Silicone Rubbers

I.C.I. Nobel Division has added a further two products to its range of Silcoset silicone rubbers. Silcoset 103, a white solvent-free paste that cures at room temperature to a resilient silicone rubber after addition of the appropriate curing agent, is recommended for high temperature sealing, patching, caulking, potting and the encapsulation of sensitive electronic assemblies. Silcoset 104 is thixotropic, with flow properties that make application from a caulking gun "eminently satisfactory". It can be readily bonded to primed metal surfaces, is especially suited for sealing, patching and caulking when a room temperature cure is necessary.

### Teepol 50% More Efficient

Following extensive research, Shell Chemical Ltd. have introduced a new grade of their well-known synthetic detergent, Teepol. It is claimed to be 50% more efficient than the older product and will be available from Shell appointed distributors from 1 May. There will be no increase in price. New, distinctive white, red and black tins will be used to market the product in 4- and 1-gall. quantities.

### Rentokil Sales Division

Rentokil Group Ltd. have decided to make many of their preparations available to large firms, government departments and local authorities which have their own pest control services or maintenance departments, and prefer to purchase bulk supplies of pesticide and repellents. Mr. J. E. Fynn, manager of the special products and exports division of Rentokil Products Ltd., Leatherhead, Surrey, is now responsible for this new departure.

### B.S. Volumetric Flasks

A list of volumetric flasks in the E-MIL range which are now covered by B.S. specification has been issued by H. J. Elliott Ltd., E-MIL Works, Treforest, Glam. Tolerance on capacity and angle of 'topple' of the flasks have been modified slightly in accordance with the international recommendation for one mark volumetric flasks.

### Dalacide

An information leaflet has been issued on Dalacide, for the control of reeds, rushes and sedges, by Borax Consolidated Ltd., Borax House, Carlisle Place, London S.W.1. Active ingredients in Dalacide are sodium 2,2-dichloropropionate (dalapon), typically 78%, and sodium 2,2,3-trichloropropionate, typically 8%.

### Durapipe P.V.C. Cement

Sole U.K. selling rights for the p.v.c. solvent cement used by Durapipe and Fittings Ltd. in all their thermoplastic pipe installations have been acquired by the company from the manufacturers, Progressive Finishes Ltd., Northampton. The Northampton firm's entire output of its No. 45 high-impact solvent weld cement, for which demand has been growing in the plastics pipe and sheeting industry, will now be available from Durapipe and Fittings Ltd., Winnock Road, West Drayton, Middlesex. The cement, which will be marketed under the name Durapipe p.v.c. solvent cement (No. 45), is to be sold in 45-gall. and 5-gall. drums; and in 1-gall, 1-pint and half-pint tins.

### Uses of Carbon

Carbon contacts for electrical equipment, the measurement of brush pressure and carbon seals for pumps are among subjects discussed in 'Carbon and its uses', a 44-page illustrated brochure produced by the Morgan Crucible Co. Ltd., Battersea Church Road, London S.W.11.

### Industrial Gas Prices

All prices of industrial gases produced by British Oxygen Co. Ltd. were increased by between 5 and 10% on 1 May. This increase, the first to be implemented since 1957, will not affect the price of tonnage oxygen used in steel making.

### 'The Engineer' Buyers' Guide

Some 1,860 suppliers of engineering and industrial products and services are the subject of entries in *The Engineer Buyers Guide*, 1961 edition, the 'buyers' guide' section containing 752 pages with over 35,100 entries arranged under some 2,700 classified headings and 1,600 cross references. Other sections included in the book, which comprises 984 pages in all, deal with: forthcoming engineering and industrial exhibitions; associations, institutions and societies connected with the engineering industry; the nationalised industries; full addresses, telephone numbers, etc., of engineering firms; U.K. agents for foreign firms; and an alphabetical list of trade names with the firms using them.

Copies of the book, price 10s each (plus 2s postage) are available from The Manager, *The Engineer* Buyers Guide, 28 Essex Street, Strand, London WC2.

### Nickel Alloys on Show

An exhibition of heat-resisting alloys will be held by Henry Wiggin and Co. Ltd., Thames House, Millbank, London S.W.1, at the following: the Imperial Hotel, Birmingham, 9-11 May; and the Hotel Metropole, Leeds, 16-18 May. The exhibition will feature the Nimonic series, the Nimocast series, Inconel, Incoloy and Incoloy DS.

---

### Opportunities for Chemical Firms in Spain

'Spain: A Challenge and an Opportunity' is the title of the report of the Federation of British Industries delegation to Spain earlier this year. Available from the F.B.I., 21 Tothill Street, London S.W.1, price 7s 6d, it deals among other industries with opportunities for exports of British-made chemicals.

---

### Construction Equipment Exhibition

An international construction equipment exhibition is to be held on the Crystal Palace site on 15-24 June. The exhibition is to provide a comprehensive display of construction equipment for the building and engineering industries, ranging from small hand mechanical power tools to the largest earth moving and road making machinery.

---

## *Market Reports*

## COPPER SULPHATE PRICE UP £1/TON

**LONDON** Steady conditions continue to be maintained in most sections of the industrial chemicals market, and the price position, with few exceptions, is unchanged, the chief news being that copper sulphate has been advanced by £1/ton to £78/ton less 2% f.o.b. Liverpool.

The volume of new home trade business has been good, interest being chiefly concerned with spot or nearby requirements. The demand for agricultural chemicals is running at about the seasonal level, while there has been little change in the position of the coal tar products, most products being in steady request.

**MANCHESTER** From the point of view of contract deliveries, steady trading conditions have been reported and a fair aggregate weight of replacement business for home use as well as for shipment has been booked. Alkalis and magnesium and barium compounds have been mostly moving into consumption in good quantities, with a fairly steady trade passing in alum, aluminium sulphate and formaldehyde. Borax, boracic acid and glycerine are also in steady call. On the export side there is a good demand from the main Commonwealth outlets, including Australia, New Zealand and India.

**SCOTLAND** Trading conditions were much busier in most sections of the heavy chemical market, quantities being maintained and contract deliveries featuring well. The offtake against spot requirements were also at a good level and apart from the general run of caustics, hypos and acids quite a varied range of auxiliary chemicals were demanded.

Prices in the whole showed little change and mostly remained firm. The overseas market still shows considerable interest with enquiries numerous and varied.

# NEW PATENTS

*By permission of the Controller, H.M. Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.*

*Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.*

## AMENDED SPECIFICATIONS

### On Sale 24 May

Morpholine and piperazines. Jefferson Chemical Co. 813 957

Olefin polymerisation. Petrochemicals Ltd. 823 194

Polyvinyl chloride. Hercules Powder Co. 834 937

## ACCEPTANCES

### Open to public inspection 31 May

Polymeric reaction products of aluminium alkoxides. Hardman & Holden Ltd., and Rinse, J. 869 171

Process for treating platinium catalyst containing absorbed hydrogen and carbonaceous material. Kellogg Co., M.W. 869 508

Herbicides. Diamond Alkali Co. 869 215

Process for the production of 2-phenyl-1,3-butadiene. Distillers Co. Ltd. 869 456

Steroids and the manufacture thereof. Upjohn Co. 869 511

Composite carbonpolymer compositions and process of manufacture. National Lead Co. 869 391

Process for grafting olefins on to organosilicon compounds. Midland Silicones Ltd. 869 482

Curing of polyepoxides. Bataafse Petroleum Maatschappij N.V. 869 484

Polyurethane elastomers. United States Rubber Co. 869 562

Production of N-substituted polyamides. Badische Anilin- & Soda-Fabrik AG. 869 079

Tricyclic oxygen-containing compounds and pesticidal compositions containing them. Farbenfabriken Bayer AG. 869 485

O.O-dialkyl-thiol- and O.O-dialkyldithio-phosphoric acid esters of lactams and thiolactams. Badische Anilin- & Soda-Fabrik AG. 869 399

Steroids and the manufacture thereof. Upjohn Co. 869 564

Process for the preparation of ether-amines. Dehydag Deutsche Hydrierwerke GmbH. 869 495

Process of recovering diamines and diacids from polyamides. Badische Anilin- & Soda-Fabrik AG 869 318

Fuel composition for aqueous homogeneous nuclear reactors. Allmänna Svenska Elektriska A.B. 869 451

Iodobenzenedicarboxylic acid esters. Sterling Drug Inc. 869 083

Salts of polymerised alkylene imines and lubricating compositions containing them. Shell Internationale Research Maatschappij N.V. 869 084

Derivative of L-ascorbic acid. Merck AG, E. 869 458

Copolymers suitable for use as primers. American-Marietta Co. 869 459

Complex metal aluminium hydrides and their production. Badische Anilin- & Soda-Fabrik AG. 869 179

Electrochemical manufacture of halohydrins. Standard Oil Co. 869 087

Herbicide compositions. Shell Research Ltd. 869 088

Continuous polymerisation process of acrylic salts. Rohm & Haas Co. 869 333

Merocyanine dyes and undissociated cyanine dies. Kodak Ltd. [Divided out of 869 521.] 869 532

Substituted oxazolidines and tetrahydro-oxazines. Miles Laboratories Inc. 869 129

Chemically modified starch product and process of producing same. Staley Manufacturing Co., A. E. 869 591

Tetraene. Searle & Co., G. D. 869 443

Phenyl-tetrahydropyryl-piperazines. Miles Laboratories Inc. 869 460

Low-pressure polymerisation of olefinic compounds and catalysts therefor. Shell Research Ltd. 869 492

### Open to public inspection 7 June

Separation of glucosaccharolactones. Pfizer Ltd. 870 051

Graft copolymers. B.X. Plastics Ltd. 870 052

Making chloro-substituted organic sulphonyl fluorides. Minnesota Mining & Manufacturing Co. 869 921

Polyoxamides. British Celanese Ltd. 870 057

Process for the manufacture of trimethylene-trinitramine. Dini, G., and Manfredi, G. 869 826

Method of preparing vinyl esters of carboxylic acids. Air Reduction Co. Inc. 869 828

Preparation of vinyl esters. Air Reduction Co. Inc. 869 829

Preparation of vinyl stearate. Air Reduction Co. Inc. 869 830

Manufacture of acenaphthenequinone monoxime. Farbwerke Hoechst AG. 869 855

Steroids and the manufacture thereof. Upjohn Co. [Addition to 790 452.] 869 815

Process for dyeing shaped structures composed of linear aromatic polyesters. Farbwerke Hoechst AG. [Addition to 809 221.] 869 631

Polymers derived from phenolic novolacs and unsaturated acetals. Union Carbide Corp. 869 658

Process for the modification of cellulosic textile materials. Imperial Chemical Industries Ltd. 869 659

Complex metal compounds of monoazo-dyestuffs containing β-halocylamide groups and their manufacture and use. Ciba Ltd. 870 047

Modified organic fluids of the borate-glycol type and methods of producing same. United States Borax & Chemical Corp. 870 048

Stabilisation of dyes. Du Pont de Nemours & Co., E. I. 869 986

Catalytic process for the reaction of organic isocyanates with hydroxyl group-containing substances. Imperial Chemical Industries Ltd. 869 988

Manufacture of surface-active acylated hydroxy-sulphonates. Unilever Ltd. 869 744

Methine dyestuffs. Farbenfabriken Bayer AG. 869 794

Substituted acetamides. May & Baker Ltd 869 796

Steroids and the manufacture thereof. Upjohn Co. 869 799

Modified polyesters. Chemstrand Corp. 869 956

Recovery of alkali metal hydroxides and salts from the residual liquors from the production of cellulose. Comercial Papelera Torras S.A. 869 800

Pigments comprising sulphonamide-aminotriazine-formaldehyde resins. Switzer Bros. Inc. [Addition to 769 344.] 869 801

Production of polypyridyls. Imperial Chemical Industries Ltd. 869 954

Production of 2:2¹-dipyridyl. Imperial Chemical Industries Ltd. [Divided out of 869 954.] 869 955

Production of dicyclohexyl phthalate. Monsanto Chemical Co. 869 959

Method of purifying diorganodihalogenosilanes. General Electric Co. 869 962

Manufacture of copolyesters. Imperial Chemical Industries Ltd. 869 964

Process for the preparation of 3-substituted oxazolid-2:-4-diones. Murphy Chemical Co. Ltd. 869 807

Diazacycloalkenes and the preparation thereof. Pfizer & Co. Inc., Chas. 869 977

Calcination of silicate materials. Farbenfabriken Bayer AG. [Addition to 866 326.] 869 966

Process for rectifying a formaldehyde-containing solution. Sumitomo Chemical Co. Ltd. 869 764

Method of producing N-alkyl- and -cycloalkyl-piperidine carboxylic acid amides Bofors A.B. 869 978

Metal-containing monoazo dyestuffs. Farbenfabriken Bayer AG. 869 842

Method of preparing hydrolysable silyl thioethers. General Electric Co. 869 844

Organopolysiloxane elastomers. General Electric Co. 869 845

Process for the production of stable aqueous emulsions of polymers which can be cross linked by oxidation. Farbenfabriken Bayer AG. 870 015

Production of mesityl oxide copolymers. Bataafse Petroleum Maatschappij N.V. 869 750

Manufacture of oximes. Imperial Chemical Industries Ltd. 869 773

Process for the preparation of 10-amino-11-hydroxy - naphth-(2,3-c)-acridine-5, 8, 14 (13H)-trione. Haase, J. 869 995

Process for partially dehalogenating di- and trihaloacetic acid. Knapsack-Griesheim AG. 870 040

Organosilicon compounds. General Electric Co. 870 024

Process for the production of condensation products. Farbenfabriken Bayer AG. 869 997

Process for curing a glycidyl polyether. Shell Internationale Research Maatschappij N.V. 869 969

Aminopyridinediazonium salts. General Aniline & Film Corp. 870 027

Aryl-substituted alkylamines and methods for their production. Parke, Davis & Co. 870 029

3-Indolyl ketones. Upjohn Co. 869 775

Process for recovering glutamic acid from fermentation broth. Ajinomoto Co. Inc. 870 031, 870 940

Alkyl (1-p-menthen-6-yl) ketones. Givaudan & Cie. S.A., L. 870 001

Treatment of hydrocarbon mixtures derived from coal. Union Carbide Corp. 870 041

Laminates containing silicone rubber. Midland Silicones Ltd. 870 003

Dithiophosphonic acid compounds and preparation thereof. American Cyanamid Co. 870 005

Organosilicon liquids. Midland Silicones Ltd. 870 007

Isobutyrophenone compounds and the production thereof. Parke, Davis & Co. 869 776

Manufacture of steroids. Upjohn Co. 869 777

Reduction of tetrahydrobenzaldehydes. Ciba Ltd. 870 009

Polymerisation of isoprene. Goodrich-Gulf Chemicals Inc. [Addition to 827 365.] 870 010

Process for purifying conjugated diolefins. Farbenfabriken Bayer AG. 869 789

Means for disposal of carbon sludge produced in the partial oxidation of hydrocarbon fuel. Canadian Industries Ltd. 869 749

Method for preparing polymeric anhydrides and polymeric acyl halides. Goodrich Co., B. F. [Addition to 834 357.] 869 867

Purification of crude dimethyl terephthalate by distillation. Badische Anilin- & Soda-Fabrik AG. 870 012

Polymerisation. Union Carbide Corp. 870 043

Omega-chloro-polyfluoroalkane sulphonyl fluorides and derivatives thereof. Minnesota Min-in & Manufacturing Co. [Divided out of 869 921.] 869 922

## DIARY DATES

**MONDAY 8 MAY**

**S.C.I.**—London: 14, Belgrave Sq., S.W.1., 6 p.m. A.g.m. of Corrosion Group.

**TUESDAY 9 MAY**

**S.C.I.**—Edinburgh: Visit to British Hydrocarbon Chemicals at Grangemouth.

**S.C.I.**—London: 14, Belgrave Sq., S.W.1., 2.30 p.m. Symposium on 'Financing a new chemical plant project', 'selecting a site for a new chemical plant project', & 'designing & building a new chemical plant project'.

**S.C.I.**—London: 14, Belgrave Sq., S.W.1, 10.30 a.m. A.g.m. of Agricultural Group and 'Manuring of tropical crops'. All day meeting.

**THURSDAY 11 MAY**

**F.S.**—Visit to Fisons Fertilisers Ltd., at Stanford-le-Hope & Shell Chem. Co. Ltd., at Shell Haven and 14th A.g.m.

**FRIDAY 12 MAY**

**S.A.C.**—Nottingham: Nottingham & District Tech. Col., Burton St., 7.15 p.m. 'The scope of automation in the laboratory' by G. Matlock, 'A colorimeter-type instrument for the continuous & automatic analysis of ga e: in the parts per million range' and 'An automatic titrimeter' by M. Akhtar.

## IT'S A SMALL WORLD

## AND MARCHON SURFACTANTS PLAY A BIG PART IN IT

You don't need a little bird to tell you that. Ask any detergent manufacturer and he'll tell you that many of the best known detergents are formulated from Marchon surfactants.

**$SO_3$ SULPHONATED DODECYL BENZENE**

Now forms part of Marchon's range of dodecyl benzene sulphonates, and includes high purity sulphonic acids and their sodium salts with minimum inorganic content; especially suitable for liquid detergent formulations. Why not write for data, samples or advice?

Marchon

MARCHON PRODUCTS LIMITED, WHITEHAVEN, ENGLAND. MEMBER OF THE ALBRIGHT & WILSON GROUP OF COMPANIES.

# CLASSIFIED ADVERTISEMENTS

**CLASSIFIED RATES: All sections 5d. per word. Minimum 8/. Three or more insertions 4d. per word. Box Number 2/- extra.**

**SEMI-DISPLAY: 30/- per inch. Three or more insertions 25/- per inch.**

## *BUSINESS OPPORTUNITIES*

Indian Manufacturers are interested in exporting Sodium Dichromate, Sodium Sulphide, Chromic Acid and Aluminium Sulphate and Ferric. Enquiries should be addressed to **The Cawnpore Chemical Works Private Limited, Post Box 27, Kanpur, U.P., India.**

## *EDUCATIONAL*

**A.M.I.CHEM.E.**—More than one-third of the successful candidates since 1944 have been trained by T.I.G.B. All seeking quick promotion in the Chemical and Allied Industries should send for the T.I.G.B. Prospectus. 100 pages of expert advice, details of Guaranteed Home Study Courses for A.M.I.Chem.E., B.Sc.Eng., A.M.I.Mech.E., A.M.I.Prod.E., C. & G., etc., and a wide range of Diploma Courses in most branches of Engineering. Send for your copy today—**FREE.** T.I.G.B. (Dept. 84), 29 Wright's Lane, London, W.8.

**BRADFORD INSTITUTE OF TECHNOLOGY**
**DEPARTMENT OF CHEMICAL ENGINEERING**

A Short Course on

**"REFRIGERATION IN THE CHEMICAL INDUSTRY"**

will be held on Thursday and Friday, 29th and 30th June, 1961.
Course Fee: £1 10s. 0d.
Further details and forms of application may be obtained from the Head of Department of Chemical Engineering, Bradford Institute of Technology, Bradford, 7.

## *FOR SALE*

Two Excellent Mild Steel Lead Lined (16 lb.) Storage Vessels. Each 35 ft. long by 9 ft. diameter. Immediate delivery. Inspection our Works.

**MADEN & McKEE LTD.,**
**317 Prescot Road,**
**Liverpool, 13.**

**Baker-Perkins VACUUM MIXERS** with Steam Heated Naben Blades and Troughs. Two 33 in. by 39 in. by 28 in. with 35 H.P. Three 21 in, by 21 in. by 20 in. with 12 H.P. Two 16 in. by 16 in. by 14 in. with 9 H.P. Drives. Lying: WILLOW TREE WORKS, Swallowfield, Berks.

**Apply: WINKWORTH MACHINERY LTD.,**
**65 High Street, Staines.**
**Telephone 55951**

## *FOR SALE: continued*

Offers invited for: Once used fibre containers 21 in. diameter by 31 in. with lever closed metal lids. Excellent condition. Regular supplies available. **Petrolite Limited, Birchill Road, Kirkby Industrial Estate, Nr. Liverpool.**

## *MATERIALS WANTED*

**WANTED**

**Scrap Electrode Carbons, Graphite Offcuts, etc.**

send samples and details of tonnage available to
**FINE GRINDING LTD.,**
**Blackhole Mine, Eyam, Derbys**
'phone Eyam 227

## *OVERSEAS APPOINTMENTS*

**TROPICAL PESTICIDES RESEARCH INSTITUTE, ARUSHA, TANGANYIKA**

Vacancies exist for pesticides specialists:—

**Chemist**: For research into the chemical aspects of the control of tropical pests. Candidates must have a good honours degree in chemistry. Post-graduate research experience, preferably in insecticide analysis, would be an advantage.

**Entomologist**: To study control of vectors of disease with special reference to acquired resistance under a Senior Entomologist and in co-operation with chemists. Candidates must have a good honours degree in a biological subject.

**Biologist**: To carry out field and laboratory research on control of snail vectors of Schistomiasis in particular the testing and evaluation of new molluscicides including a co-operative programme with the W.H.O. Candidates must have a good honours degree in a biological subject and experience in research methods of testing pesticides.

**Plant Pathologist**: To study the plant pathological problems involved in the application of fungicides for the control of plant diseases in the tropics. Candidates must have a good honours degree in a biological subject and two years post-graduate training or experience preferably in the study of plant diseases.

All appointments are on contract/gratuity terms for one or two tours of 21-27 months in the first instance. Salaries in scale £1,221-£2,808. Gratuity 25 per cent. Generous education allowances. Free passages. Furnished accommodation, when available, at low rental. Generous leave.

Apply stating full name and giving brief particulars of qualifications and experience to Director of Recruitment, Colonial Office, London, S.W.1. Quote BCD 87/8/01.

*OVERSEAS APPOINTMENTS: continued*

## CHEMIST

### TANGANYIKA

**Qualifications:** Candidates must have a good honours degree in chemistry, or equivalent professional qualification. Specialisation in Public Analyst work desirable. R.I.C. Diploma in Applied Chemistry in Branch "E" an advantage.

**Duties:** General analytical work in toxicology, food and drugs, and water; supervision of assistants.

**Terms of Appointment:** On contract for a tour of 21-27 months in first instance, with gratuity of 25 per cent of emoluments, which are according to experience in the scale £1,221-£2,448 p.a. Generous education allowances. Outfit allowance. Free family passages. Free medical attention. Furnished quarters at moderate rental if available. Generous leave. Local income tax.

Apply to Director of Recruitment, Colonial Office, London, S.W.1, quoting BCD.117/8/037/FI, and stating full name, age, qualifications and experience.

*PATENTS & TRADE MARKS*

The Proprietors of Patent No. 766494 for "Process for the Separation of Gaseous Hydrocarbon Mixtures into Individual Constituents or Factions Thereof", desire to secure commercial exploitation by Licence or otherwise in the United Kingdom. Replies to Haseltine Lake & Co., 28 Southampton Buildings, Chancery Lane, London, W.C.2.

*PLANT AND MACHINERY FOR SALE*

Baker-Perkins Class BB "Double Naben" Bladed Steam Jacketed Mixers. Four—size 12 and Three—size 11, of 20 and 8 gallons respectively.

Oil Jacketed Double Trough Mixer 48 in. by 36 in. by 29 in. deep. Paddle Blades. Bottom Outlets.

Barron 'U' Sifter Mixer 96 in. by 33 in. by 33 in. with 10 H.P A.C. Motor.

Gardner 'U' Sifter-Mixers 66 in. by 24 in. by 24 in. with 5 H.P. A.C. Motors. Four available, of modern streamlined design.

Horizontal 'U' Trough Mixers 48 in. by 18 in. by 22 in. Three—Tilting type, Paddle Blades. Glanded.

Over-Arm Twin-Blade, Tilting, 30 gallon Mixers with 3 H.P. Geared Motors. Five available.

Lying at our No. 2 Depot, Willow Tree Works, Swallowfield, Berkshire.

**Apply: Winkworth Machinery Limited, 65 High Street, Staines, Middlesex. Telephone 55951.**

Three Lead lined **STEEL TANKS**, 14,000 galls., 9 ft. diam. by 35 ft. long.

Three Lead lined **STEEL TANKS**, 9,500 galls., 13 ft. 6 in. diam. by 10 ft. high.

Two **NICKEL SILVER TANKS**, 6,750 galls., 8 ft. diam. by 23 ft. 3 in.

Brand New **COCHRAN** Vertical and **ECONOMIC** Self-contained **STEAM BOILERS** in stock, also all sizes reconditioned and guaranteed. List on request.

**STAINLESS STEEL TANKS, PANS, CONDENSERS, PLATES, VALVES AND COCKS.** Very wide selection.

**FRED WATKINS (ENGINEERING) LTD.,**
**COLEFORD, GLOS.**
Phone: Coleford 2271/2.

**Phone 55298 Staines**
**STAINLESS STEEL PLANT**

S.S. Tanks 500, 400 and 220 galls. Cyl. Conical Bottoms.
S.S. Mixing Tank—300 galls. A.C.
S.S. Jac. Pasteurisers/Mixers 50, 100 and 150 galls.
S.S. Rect. Tanks 850 and 450 galls.
S.S. Spherical Still 6 ft. 6 in. diam.
S.S. Duplex 'Z' Mixer (Vacuum) 3 ft. by 3 ft. by 3 ft. deep.
S.S. Worm Conveyor—Trough 10 ft. by 5 in. by 5 in.
S.S. Homogeniser ½ H.P. 1,000 p.s.i. 25 g.p.h.
S.S. 'Hurrell' Homogeniser 5 H.P. 400/3/50.
**Glass Lined Tanks** 1,300, 2,000, 3,000, 3,250 and 3,600 galls.
**(2) Jacketed Glass Lined Tanks** 2,000 galls. each.
Mixers, Hydros, Condensers, Stills, Retorts, Reactors, etc.

Send for Lists.

**HARRY H. GARDAM & CO. LTD.,**
**100 CHURCH STREET, STAINES.**

*PUBLIC APPOINTMENTS*

The **SCIENTIFIC CIVIL SERVICE** needs men and women for pensionable posts as (a) **EXPERIMENTAL OFFICERS** and (b) **ASSISTANT EXPERIMENTAL OFFICERS** in Mathematics, Physics, Meteorology, Chemistry, Metallurgy, Biological Sciences, Engineering, Miscellaneous (Geology, Library and Technical Information Services). Candidates must, on 31.12.61, be at least 26 and normally under 31 for (a), and at least 18 and normally under 28 for (b). Qualifications should normally include H.S.C., or G.C.E., or equivalent, or H.N.C., a University degree, or a Diploma in Technology. Provisional admission if taking examinations in 1961. London salary scale (a) £1,117-£1,376; (b) £465 10s. (at 18) to £826 (26 or over) rising to £1,009. Promotion prospects. Further education facilities. Write Civil Service Commission, 17 North Audley Street, London, W.1, for application form, quoting **S/94-95/61.**

*SITUATIONS VACANT*

**COALITE AND CHEMICAL PRODUCTS LIMITED** have vacancies in their laboratories at Bolsover for chemists and technologists who would be interested in work related to the low temperature carbonisation of coal. The work is both interesting and rewarding. For those possessing outstanding capabilities, opportunities will arise for employment in, or transfer to research work and to production supervision. Vacancies exist in the following laboratories:—

**CENTRAL REFINERY** Analytical and Production Control Laboratories

**CARBONISATION WORKS** Production Control Laboratory

**RESEARCH DEPARTMENT** Organic Chemistry, Carbonisation and Fuel Laboratories

Applications stating age, experience, qualifications and salary required to:—

**Assistant Managing Director,**
**Coalite and Chemical Products Limited,**
**P.O. Box No. 21,**
**Chesterfield.**

In addition to filling these particular vacancies, applications are invited from young men aged 17/20 years, interested in science, with a view to training in the carbonisation and coal chemicals industry.

## PROCESS PLANT

There is a vacancy for an

## Office Salesman

in the West London office of a well-known and old established Company.

The applicant who should be 25/35 years will be required to deal with the sale of Process Plant and preference will be given to an applicant with knowledge of Plant used in the Chemical and Allied Trades. Superannuation Scheme and excellent prospects of advancement.

*Apply, giving details of age and experience to*

**Personnel Manager,**
**George Cohen Sons & Co. Ltd.,**
**600 Wood Lane, London, W.12.**

*WANTED*

**WANTED.**—Scrap Graphite either new or used. Current price offered approximately £10/12 ex works in minimum 1 ton lots. Please submit samples. **Box 3746, Chemical Age.**

**CLASSIFIED ADVERTISEMENTS**

*Continued on page 741*

# Chemical Age Enquiry Service

For fuller details of equipment, apparatus, chemicals etc., in the advertisement or editorial page of Chemical Age, fill in the coupons below, ONE PER ENQUIRY, and return to us.

*Please send further details about* .....
.....
.....
*mentioned on page*.....*of this issue.*
*Name*..... *Position*.....
*Firm*.....
*Address* .....
.....
**Chemical Age Enquiry Service.**

*Please send further details about* .....
.....
.....
*mentioned on page*.....*of this issue.*
*Name*..... *Position*.....
*Firm*.....
*Address* .....
.....
**Chemical Age Enquiry Service.**

*Please send further details about* .....
.....
.....
*mentioned on page*.....*of this issue.*
*Name*..... *Position*.....
*Firm*.....
*Address* .....
.....
**Chemical Age Enquiry Service.**

★ *Detach this page complete then fold as marked overleaf to use the post-paid reply folder*

2nd FOLD

Postage will be paid by the Licensee

No Postage Stamp necessary if posted in Great Britain or Northern Ireland

BUSINESS REPLY FOLDER
Licence No. 2501

**CHEMICAL AGE**
**154-160 FLEET STREET**
**LONDON, E.C.4**

1st FOLD

3rd FOLD

# Chemical Age

## ENQUIRY SERVICE

★

- *This is a special service for readers of*

  **CHEMICAL AGE**

- *It is designed to give fuller information on equipment, apparatus, chemicals etc., mentioned in this issue—whether in the editorial text or in an advertisement*

- *Cut out the whole of this page, fold as instructed with post-paid address on the outside*

★

**Chemical Age**
154 Fleet Street, London, E.C.4
*Tel.: Fleet Street 3212*

CUT ALONG THIS DOTTED LINE

Printed in Great Britain by The Press at Coombelands Ltd., Addlestone, Surrey, and published by Benn Brothers Ltd., at Bouverie House, 154 Fleet Street, E.C.4.
Registered at the General Post Office. Entered as Second Class Matter at the New York U.S.A., Post Office.